Assets and Challenges for Accelerated Technology-Based Growth in Hidalgo County: A Knowledge-Based Benchmarking

By: **Gerald D. Brazier and David V. Gibson**

Date: October 31, 2001

Abstract:

Assessment of assets and challenges to the development of a knowledge-based economy in Hidalgo County, Texas, driven by technology industries, second-generation manufacturing, and value-added support services. Includes data on demographics, economy, education, infrastructure, and business activity, as well as a survey of local business leaders on factors affecting economic development.

Keywords: economic development; Hidalgo County, Texas; Texas

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A CBIRD (Cross Border Institute for Regional Development) Core Program, funded by the Economic Development Administration.

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Gerald D. Brazier and David Gibson
Edinburg and Austin
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Highlights of the Report

This is a report of an assessment of Hidalgo County's assets and challenges to accelerating the development of a knowledge-based economy driven by technology industries, second-generation manufacturing, and value-added support services. In examining the resources available and gathering the opinions of the community, this assessment provides a framework within which strategies can be developed by the business, academic, and government sectors to create high value jobs and to accelerate economic growth in Hidalgo County.

Demographics

- The population growth in Hidalgo County has been explosive (48.5% since 1990)—the fourth fastest growing MSA in the United States.
- The population of Hidalgo County is markedly younger than that of Texas or the United States, with nearly 40% under the age of twenty and slightly over 20% under the age of ten.
- Thirty-eight percent of the people in Hidalgo County live in poverty.

Employment and Wages

Job growth has been dramatic (21% increase in the past five years), bringing unemployment to near historic lows in the county (13.6%).

However:

- This unemployment rate is still the highest of any MSA in the nation.
- **The reduction in unemployment has not prevented a widening of the income gap between Hidalgo County and the rest of the state**—per capita income in Texas increased by $5,300 in the past five years, but only increased by $2,000 in Hidalgo County.
- The average earnings per job in the county in 1999 was 66% of the state average, down from 70% in 1995.
- Even in technical fields, wages are no more than 85% of the state average.

Regional Education, Training, and R&D

The **quality of education, at all levels, is the most critical concern** expressed in every survey, every focus group, and every interview.

Public Schools

- Public school education appears to be improving with a large increase in the number of high school graduates completing a college preparatory curriculum.
- In spite of low official drop-out rates, there are far fewer students enrolled in the twelfth grade currently than were enrolled in the eighth grade five years earlier.
- **Only 9% of Hidalgo County students who took either the SAT or ACT met criteria set by the Texas Education Agency**—statewide, 27% of the students met that criteria.
- Only 40% of the county's students passed the Algebra I End-of-Course examination.

Community College Education

- The enrollment at South Texas Community College (STCC) has more than doubled in the last five years.
- As is the pattern with community colleges, STCC has a low rate of completion of an associate's degree or certificate of training—in 2000, there were 820 graduates (464 associates, and 356 certificates).
- In the past three years, STCC has graduated 261 students, with degree or certificate, in a Science, Mathematics, Engineering or Technology (SMET) program.

University Education

- The enrollment at the University of Texas – Pan American (UTPA) has been relatively flat for the last five years. With the opening of STCC, the university has seen its upper level and graduate programs increase while the lower level enrollment has decreased.
- There have been significant increases in enrollment and graduation in science and engineering programs—**currently, 20% of the students are majoring in a Science, Mathematics, Engineering or Technology (SMET) discipline**.
- In spite of the strong growth, **Computer Science and Engineering still only graduated 76 students in the academic year 1999-2000—far below the number needed to meet the technical employment demands of even one modest Hi-Tech employer.**
- Graduate enrollment has increased 31% in the last five years.

Research and Development

- President Miguel Nevárez, has indicated that **one of the three priorities for the institution is to develop UTPA into a regional research university**.
- UTPA's R&D expenditures, though doubling since 1993, have been relatively flat since 1995. In 2000, federal support only accounted for 53% of the university's R&D monies. UTPA's R&D expenditures have been very modest, even in comparison to other South Texas/Border institutions.
- The sciences and engineering account for more than 70% of the R&D expenditures at UTPA.

Infrastructure Assets and Challenges

- **Water** is the overriding long-range infrastructure concern.
    - Agriculture, with less than 5% of the region's employment and income, uses 85% of the water.
    - **The HARC/ITESM study indicates that under current drought conditions and anticipated increases in municipal and industrial use there will be a 55% irrigation shortfall by 2030.**
    - Reduced flow in the Rio Grande, aside from leaving less water, negatively affects water quality and the ecosystem.
- **Transportation** is another infrastructure concern.

    - Highways are at capacity and **I-69 is viewed as an absolute necesssity, as soon as possible.**
    - The congestion and delays at the international bridges must be dealt with. The new Anzalduas Bridge is important, but will not solve the bottlenecks associated with crossing the border.
- **Telecommunications** infrastructure is expanding, but the extent of penetration of high-speed access is not known in any real detail.
    - Computer and internet use in the homes of the county has reached almost 50%, very near the national average.
    - Every classroom in every school of the region has high-speed access. This penetration exceeds the pattern in the state.

Hidalgo County's Business and Technology Sectors

Some facts about the sectors of Hidalgo County's economy:

- Agriculture continues to decline in importance, accounting for less that 5% of the county's employment.
- Health Services (10.3%) is the largest private employment sector, and Education Services (17%) is the largest public employment sector.
- Only Retail Trade and Government have income per job ratios that approach state levels. **Manufacturing jobs in the county have an average income per job that is only 53% of that of the state.**
- The small Manufacturing sector (7%) produces primarily for the Mexico and the outside-of-Texas United States market. **There appears to be a potential niche for local enterprises to provide materials for manufacturers with markets in Texas and the rest of the United States.** Currently, local companies provide less than 3% of these materials.
- In 1999, the technical sector accounted for 2.5% of the number of enterprises in Hidalgo County. Within the Hi-Tech sector (as defined by the American Electronics Association (AeA)), **two-thirds of the companies have fewer than five employees, and two-fifths have annual sales less than $500,000.**
- Call Centers have added nearly 3,000 jobs to the Hi-Tech sector in the last eighteen months.

Conclusions from the Survey of Hidalgo County Business Leaders

A key reality facing Hidalgo County, according to our sample of business leaders, is that in the next 5-to-10 years there will be few important "wealth generating industries" located in the region. "Agriculture production-crops," the top industry for job creation and economic development in Hidalgo County and the only "leading industry" in terms of wealth generation, is also noted for its declining employment and generally low wages and career development.

Important Industries for Economic Development

- Agriculture and Oil and Gas, two giants from Hidalgo County's traditional economy, are listed as being the most important "leading" industries in the coming 5-to-10 years.

- Four emerging industries (Medical, Telecommunications, Energy, and Agriculture) are or could be grounded in the more established traditional and service oriented industries in Hidalgo County and a 5th emerging industry, Computer and Information Technologies, is considered an important underpinning technology for all four of these locally established industries to be nationally and globally competitive.
- The following seven industries might well form the core of a focused economic development strategy for Hidalgo County that is focused on wealth creation and career opportunities as well as job creation and economic development:
    - Medical Technologies
    - Energy Efficiency and Conservation
    - Telecommunications
    - Agriculture Technologies
    - Computer and Information Technologies
    - Advanced Shipping and Logistics
    - E-Commerce

Factors in Economic Development

- Out of 20 key Economic Development factors **the most important is K-12 education followed by affordable and available water supplies, and college/university education.**
    - Of the top seven factors, five center on education and training and two on utilities.
    - Clearly education including primary, college, and university and a trained workforce are considered by business leaders as THE most important factors for job creation and economic development in Hidalgo County.
- Among these 20 factors, **three of them have a high importance rating combined with low rating of the region's ability to provide for them.** These three critical factors are: (1) Skill of the Entry Level Workforce, (2) Affordable and Available Water Supply, and (3) Quality of K through 12 education.
- At the very bottom of the rating of the region's ability to provide for factors is Industrial and University Research and Development—an important concern for building a case for Hi-Tech development.

The ONE BEST HOPE for Hidalgo County to spur job and wealth creation AND career and economic development is to more fully nurture and develop its young and large Human Capital Potential for established and emerging industry sectors.

Fewer than half the Hidalgo County Business Leader respondents report that the region is effective in regional economic development collaborations among Border cities and counties, in leveraging regional assets, and in cross-border collaborations. **At the bottom of the effectiveness ranking are strategies for promotion of local entrepreneurs and new business development.**

Summary of Conclusions

The one dominant conclusion of the EDA Benchmarking Report is the key importance of focused education and training to meet the needs of established and emerging technology-based industries. The Border Region has a limited window of opportunity to realize the potential economic development benefits of its human capital --- a talented, capable, young and bi-lingual workforce that is largely undereducated and underemployed.

Historic and current economic development strategies that focus on the growth of low wage jobs and low cost of living will not sustain the Valley. There is a need to transition to wealth generating and career enhancing employment. **If over the next ten years, six percent of the the anticipated new jobs in the county would be professional, technical jobs, then the overall impact would be over 7,500 additional jobs over and above current projections, and the average earnings per job would increase by an additional $2,667 over and above current projections**. However, there are serious gaps in the region's "smart" infrastructure that inhibit this transition including:

- Being able to grow, retain, and recruit talent
- Technology-focused education and training
- Increased university and corporate-based R&D targeted for strategic industry sectors
- Enhanced financial support for technology venturing and fast growth companies
- Entrepreneurial support structures and know-how for technology-based ventures
- Enhanced leveraging of regional and cross-border assets to overcome short-term and longer-term challenges

Success in meeting the above challenges will determine Hidalgo County's success in:

- The recruitment of technology-based firms
- The growth and retention of established technology-based firms
- New firm growth, retention, and recruitment
- The growth and retention of an educated and talented workforce

Introduction

Hidalgo County lies in the heart of the Rio Grande Valley, in deep South Texas, relatively distant from major cities of the state but close to Northern Mexico and its rapidly expanding population and economy. Hidalgo County is a community faced with important contraditions: rich in cultural amenities and biculturalism and in the midst of dramatic job growth (20% in five years), but challenged to meet the needs of a rapidly growing and underemployed population.

Historically, the regional economy has been dominated by agriculture, tourism, and a large retail trade industry heavily dependent on Mexican clientele. This sort of economy cannot support the exploding population—where are the high value jobs and sustainable growth to come from? Agriculture no longer plays a significant part of the economy (less than five percent of employment and income) and the sectors that are significant, the service industries, the health industry, and retail trade, are "following" rather than "leading" industries. That is, they are not wealth producing in themselves, but track other growth, particularly population. Exacerbating the situation is the fact that jobs in service and retail trade tend to be at the low end of the wage scale.

In the national and international economy of the last decade, high value jobs and sustainable growth have been strongly linked to the development of a technology-based economy. In his presentation to the *U.S.-Mexico Border Summit* held at The University of Texas – Pan American, August 2001, Ross DeVol of the Milken Institute said:

- High-tech industries are determining which metropolitan areas are succeeding or failing.
- Two-thirds of the overall variation in economic growth among US metros can be explained by their performance in high-tech industries
- As the US increasingly moves to a knowledge-driven, technology-based economy, improved training for the region's workers is mandatory to be prepared to compete for these high paying jobs
- As economic activity becomes more knowledge-based, those regions with leading technology centers will experience greater economic growth
- Because knowledge is generated, transmitted and shared more efficiently in close proximity, economic activity based on new knowledge has a high propensity to cluster within a geographic area
- High-tech growth is important for a region; if you don't measure up, you risk falling behind.

> *High-tech industries are determining which metropolitan areas are succeeding or failing.*
>
> *Ross DeVol*
> *The Milken Institute*

It seems that Hidalgo County, and the entire South Texas Border Region, must find a way to participate significantly in this knowledge-driven, technology-based economy or its young population—40% under the age of the twenty—faces a stark future of low value jobs and underemployment.

What strengths can Hidalgo County build on to allow this significant participation? What problems must be solved, and what difficulties must be overcome? This report describes the strengths and difficulties, outlines the problems, and lays the framework within which strategies can be developed build a new economy for the county and the region.

Leveraging Assets and Developing Strategies

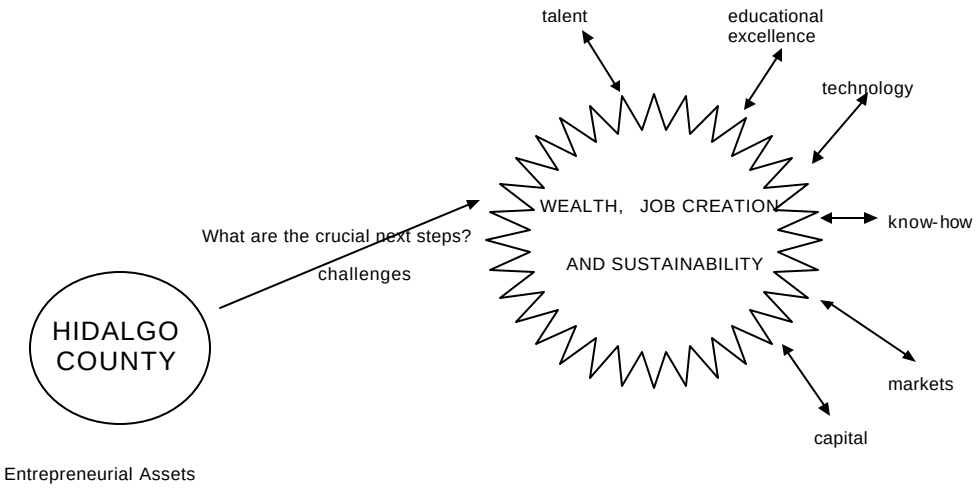
The county and the region have established educational assets, a growing and talented young workforce, and examples of successful entrepreneurial initiatives. Helping to guide its future, Hidalgo County has capable visionaries and champions from its business, government, and academic sectors. The challenge is to more effectively leverage these assets and other regional resources to successfully overcome regional challenges to:

- Grow, retain, and recruit world-class talent
- Exploit existing and new-to-the-world technologies, business processes, and support services for the benefit of the region's small, mid-sized, and large companies
- Recruit key technology, manufacturing, and service companies
- Incubate fast-growth regionally-based, globally-competitive companies
- More effectively leverage regional public and private assets as well as national and international partnerships for regional development

How effectively regional business, academic, and government sectors collaborate will determine the county's ability to create high value jobs and to accelerate economic growth

How effectively Hidalgo County and regional business, academic, and government sectors collaborate and cooperate will, in large part, determine the county's ability to create high value jobs and to accelerate economic growth while enhancing the region's quality-of-life for all its citizens.

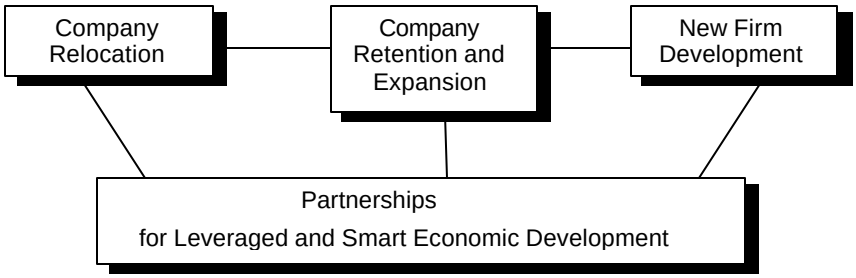
Figure 1: Leveraging Assets--Overcoming Challenges



Regional economic development depends upon four basic strategies (Figure 2):

1) The recruitment of companies
2) Retaining and facilitating the growth of regionally-based companies
3) Accelerating the growth of new start-up firms
4) Leveraging public/private partnerships: regionally, nationally, and globally

Figure 2: Four Strategies for Regional Technology-Based Economic Development



Source: IC² Institute, University of Texas at Austin

Company relocation is an important, initial strategy for economic development, but it often leads to enhanced regional competition and win-lose scenarios as communities seek to out-bid each other with tax breaks and other incentives. Retaining and expanding existing companies and facilitating the growth of new company start-ups is the economic development strategy that accelerated the growth of the nation's most successful high tech areas including Silicon Valley, Boston, and Austin. Public/private partnerships are key for technology-based economic

development to "take-off" at the regional level and national and global partnerships are increasingly necessary for sustained growth.

Key to a region's technology-based growth is the leveraging of regional business, academic, government, and community assets

Key to a region's technology-based growth is the leveraging of regional business, academic, government, and community assets such as foundations to foster the development of talent, technology, capital and know-how (Figure 3). Community-based assets are leveraged through civic entrepreneurship that is fostered by Civic Entrepreneurs, who facilitate networking and the forming of regional visions and strategies for success. Civic Entrepreneurs cross academic, business, government, and community sectors to leverage and grow talent, technology, capital, and know-how.

Figure 3: Networking and Leveraging Critical Institutions and Resources for Accelerated Regionally-Based Technology Growth

Source: IC² Institute, University of Texas at Austin

Entrepreneurial talent—whether it is centered on technology-, civic-, or social-entrepreneurship—results from the perception, drive, tenacity, dedication, and hard work of special types of individuals—people who make things happen. Where there is a pool of such talent, there is opportunity for economic growth, diversification, and new business development. Talent without ideas is like seed without water.

The entrepreneurial process is underway when talent is linked with *technology*—whether it be products, processes, or ideas. Talent facilitates the push and pull of transfer process where creative and innovative knowledge is applied to solve a community challenge or to launch a new company. Every dynamic process needs fuel, and here the fuel is capital. *Capital*—whether it be human, social or financial—is the catalyst in the technology venturing chain reaction.

Know-how is the ability to leverage talent, technology, and capital for successful business relocation, retention and expansion, new firm development, and innovative partnerships. Such know-how is often referred to as "smart infrastructure" and is considered a critical component in achieving success in regionally-based technology growth. Know-how expertise includes public policy, legal, education and more business oriented expertise including management, marketing, finance, accounting, production, manufacturing, sales and distribution. Know-how finds and applies expertise in a variety of areas and ways during technology venturing, often making the crucial difference between venture success and failure.

Report Organization

This study is an assessment of Hidalgo County's assets and challenges to accelerating the development of a knowledge-based economy driven by technology industries, second-generation manufacturing, and value-added support services. The assessment was conducted during January-September, 2001 and includes qualitative (interviews, focus groups) and quantitative (published reports, data bases, and surveys) data. Participants in the study were:

- Researchers and staff from The University of Texas – Pan American's Office of Center Operations and Community Services
- Researchers from the IC^2 Institute, The University of Texas at Austin
- Community leaders from the education, economic development, banking, technology, and manufacturing sectors, meeting in focus groups
- Local businessmen in the technology sector, taking part in interviews
- Business leaders, manufacturing representatives, and other community participants, taking part in a survey

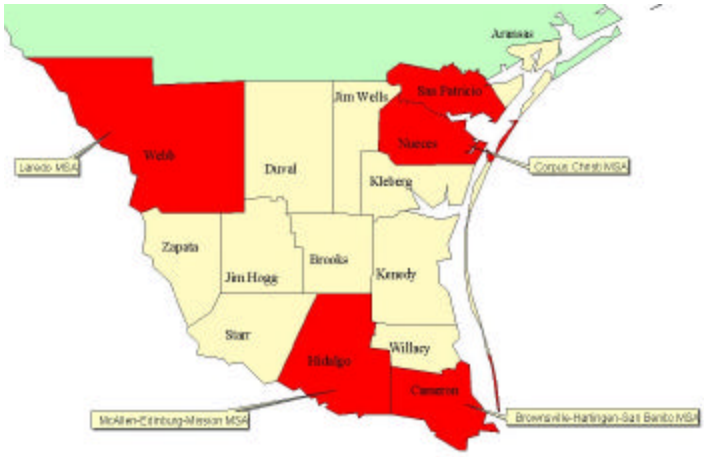
This report is divided into seven sections:
Infrastructure Assets and Challenges as they relate to technology growth

- **Section 1**: Introduction
- **Section 2**: Demographics of Hidalgo County and Comparative Regions
- **Section 3**: Regional Education, Training and Research & Development - with a focus on assets and challenges for technology-based growth
- **Section 4**: Infrastructure Assets and Challenges as they relate to technology growth
- **Section 5**: An Overview of Hidalgo County's Business Sector - with focus on the emerging Health Sector Cluster and the developing Technology Sector
- **Section 6**: Survey Results and Discussion
- **Section 7**: Conclusions

Demographics

Population

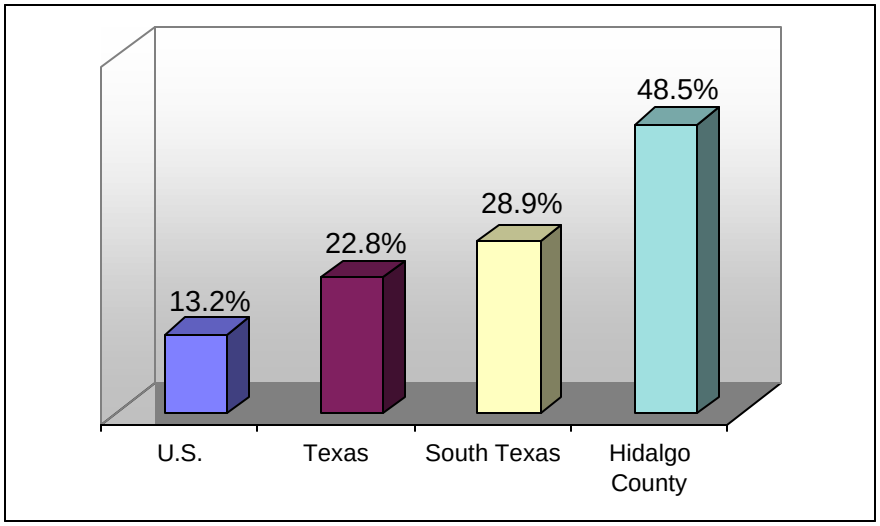
Hidalgo County is the most populous county in South Texas, the 15 county region roughly bordered by a triangle with vertices at Corpus Christi, Laredo, and Brownsville.[1]



In the 2000 census, Hidalgo County's population was 569,463, the largest in South Texas and the seventh largest (sixth largest MSA) in Texas. This represents a 48.5% increase from 1990, the fourth highest percentage increase among all the nation's MSAs, and the largest in Texas. This dramatic population increase has been fed by two sources:

1) a net natural increase rate (birth rate minus death rate) that exceeds the state rate by more than 40%, and
2) net migration, due primarily to immigration from Mexico.

Figure 4: Population Growth 1990-2000

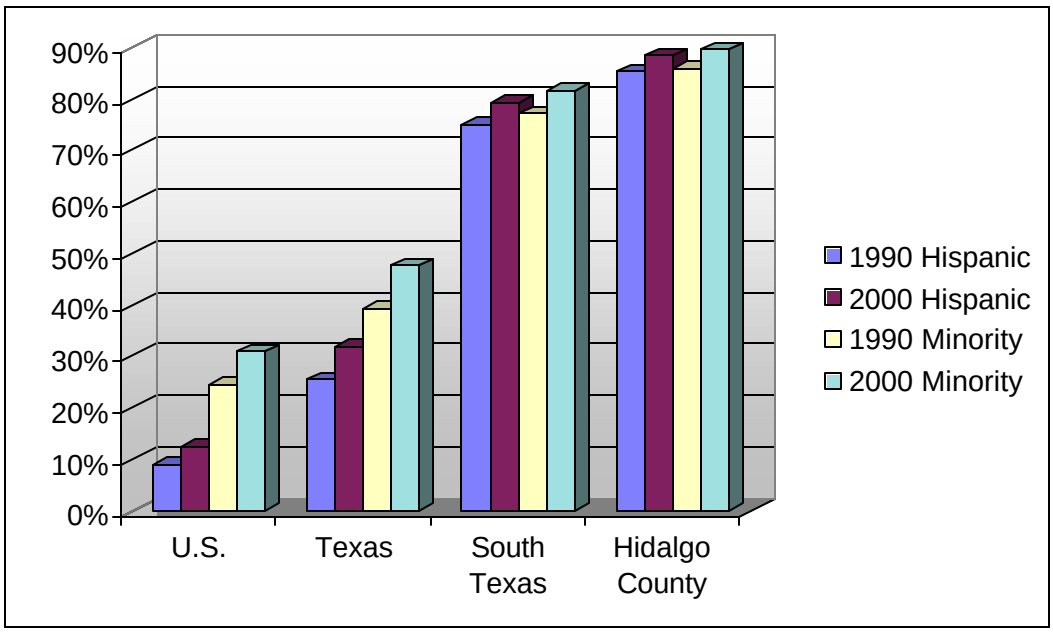


Source: Census 2000 Redistricting Data (P.L. 94-171) Summary File and 1990 Census, U.S. Census Bureau, Washington DC

[1] This is the Texas Manufacturing Assistance Center's South Texas region with the addition of Aransas County. In *Bordering the Future: Challenge and Opportunity in the Texas Border Region*, then Texas Comptroller of Public Accounts, John Sharp, identified 16 of the 43 border counties as Lower South Texas. For this report, 14 of those are included (all except McMullen and Live Oak), along with the additional county, Aransas. The region includes four Metropolitan Statistical Areas (MSAs): Brownsville/Harlingen/San Benito (Cameron County), McAllen/Edinburg/Mission (Hidalgo County), Corpus Christi (Nueces and San Patricio Counties), and Laredo (Webb County).

The population of the county is 88.3% Hispanic, the second highest concentration of Hispanics among all the U.S. MSAs (the Laredo MSA has the largest). As Figure 5 indicates, the percentage of the population of Texas that is Hispanic has dramatically increased since 1990 (from 25.5% to 32%), and the percentage of the population of the state that is classified as "minority" (those who consider themselves either Hispanic or non-white) has almost reached majority status (47.6%).

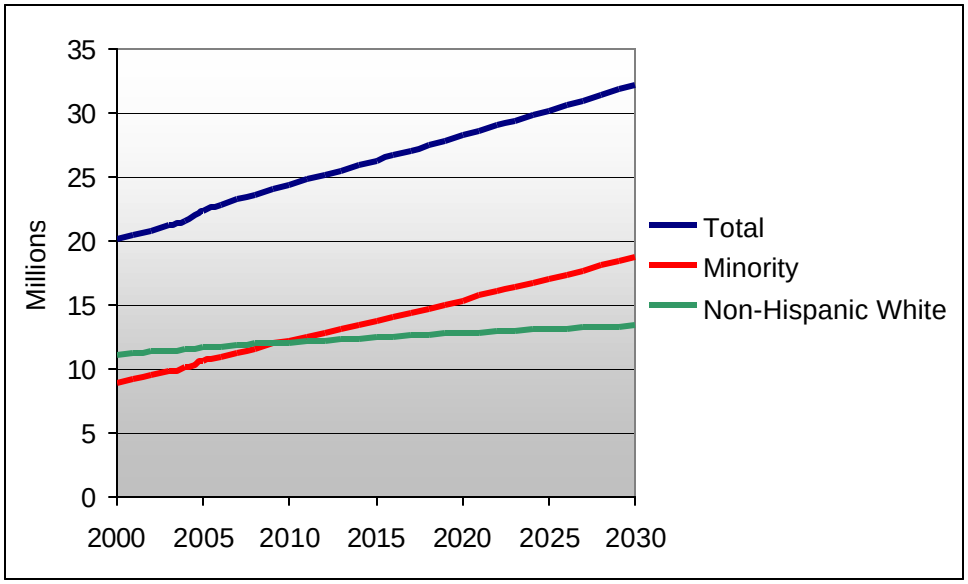
Figure 5: Hispanic and Minority Population 1990 & 2000



Source: Census 2000 Redistricting Data (P.L. 94-171) Summary File and 1990 Census, U.S. Census Bureau, Washington DC

Projections for the cities and counties of Texas (Figure 6) indicate that 81.4% of Texas' population growth over the next three decades will be from the minority population. The South Texas counties represent 8% of Texas' population, yet contain 14% of the state's minority population and 20% of the state's Hispanic population. An unmistakable conclusion of this demographic data is that perhaps one of the most important determinants, and maybe the key determinant, of South Texas' assets and challenges concern Hispanic and minority populations. Indeed it could argued that the economic and social well being of Texas will be significantly impacted by how well the state's Hispanic and minority populations are fully integrated into the business, education, and government sectors of the state.

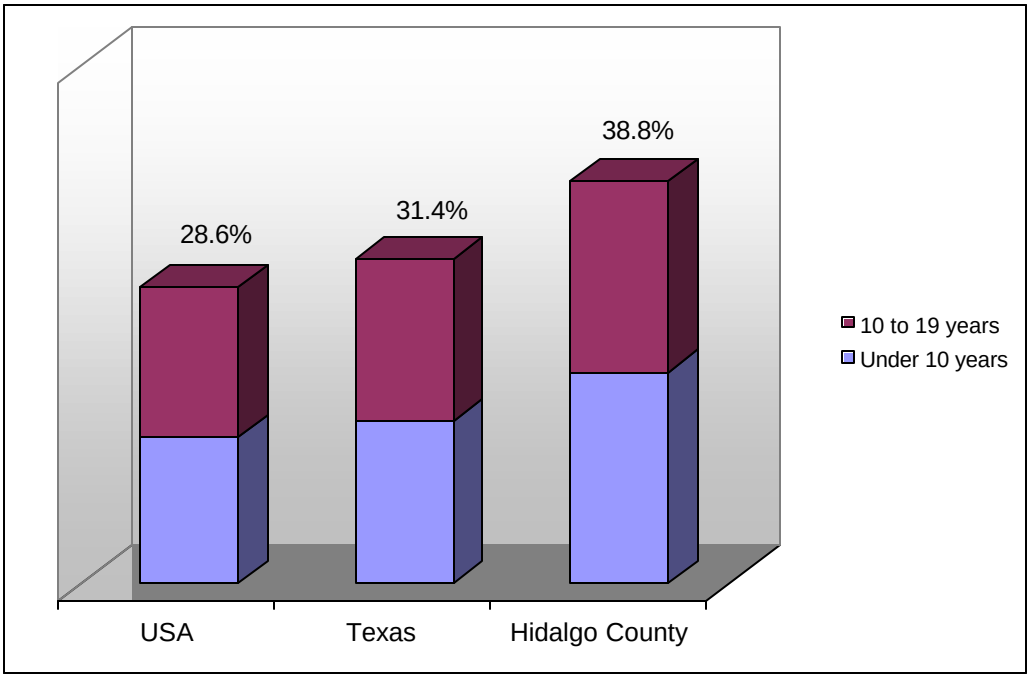
Figure 6: Texas Population Projections, 2000-2030



Source: Projected Population 2000-2030, Texas State Data Center, College Station, TX

Aside from being primarily Hispanic, the population of Hidalgo County is significantly younger than that of the United States and Texas (Figure 7).

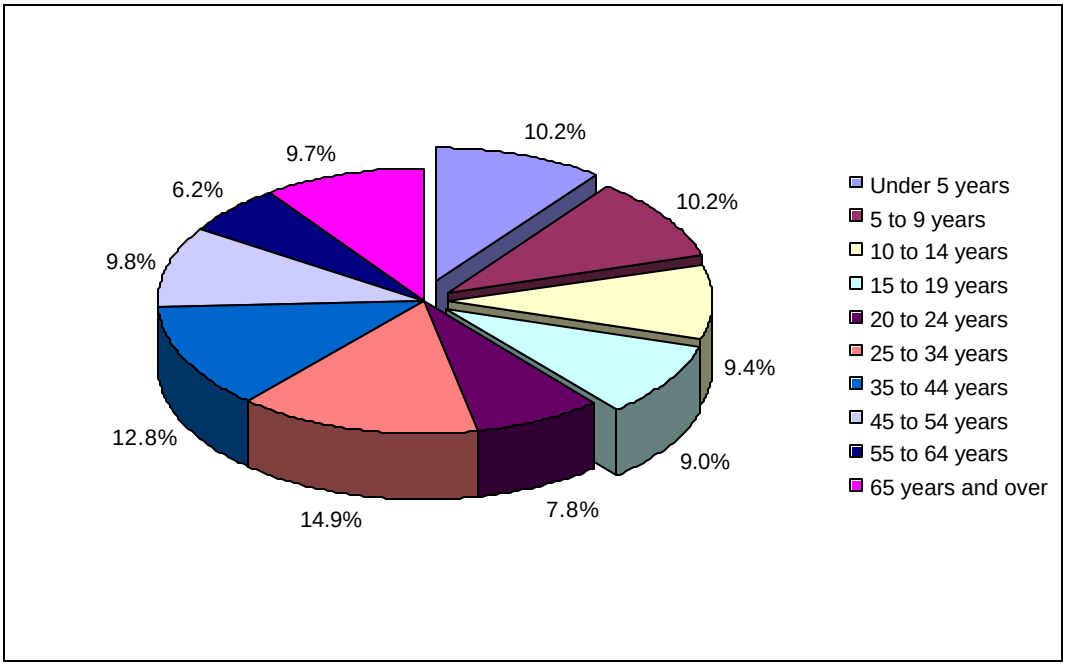
Figure 7: Population Under 20 Years Old, 2000 Census



Source: Census 2000 Redistricting Data (P.L. 94-171) Summary File, U.S. Census Bureau, Washington DC

Most striking is that 20.4% of the population is under the age of ten and almost 40% is under the age of twenty.

Figure 8: Hidalgo County Age Distribution, 2000 Census



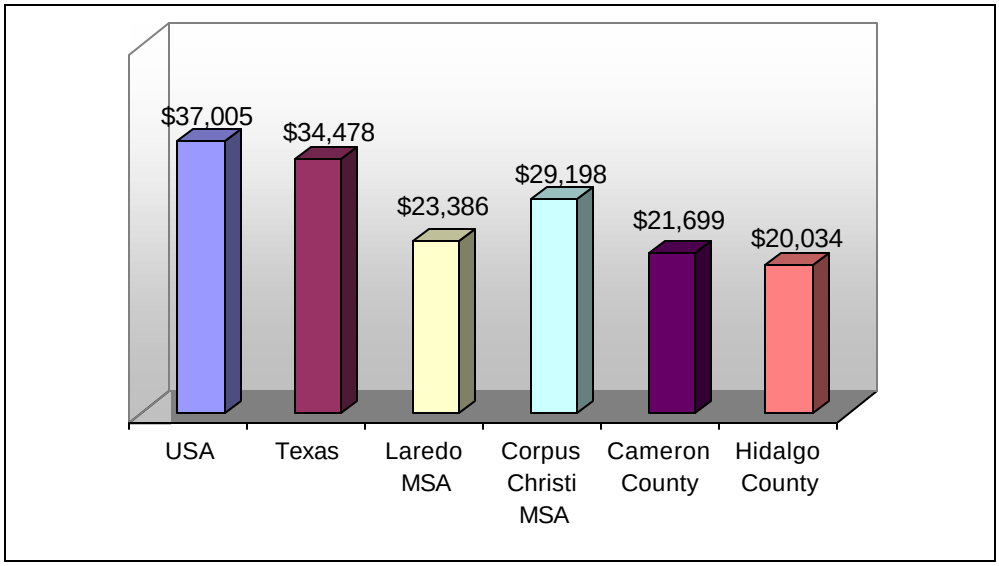
Source: Census 2000 Redistricting Data (P.L. 94-171) Summary File, U.S. Census Bureau, Washington DC

The implications of this distribution are enormous: there is a huge bulge coming through the demographic pipeline in the next ten to twenty years. It is an inescapable conclusion of these data that for South Texas in particular, and Texas in general to maintain and grow its quality of life, (1) these young people must be educated and trained for the workforce, and (2) the regional economy must grow sufficiently to provide for employment, including high wage jobs and career development. These challenges are not simply local to Hidalgo County—the very future of Texas depends upon the economic health of the border region.

Income and Employment

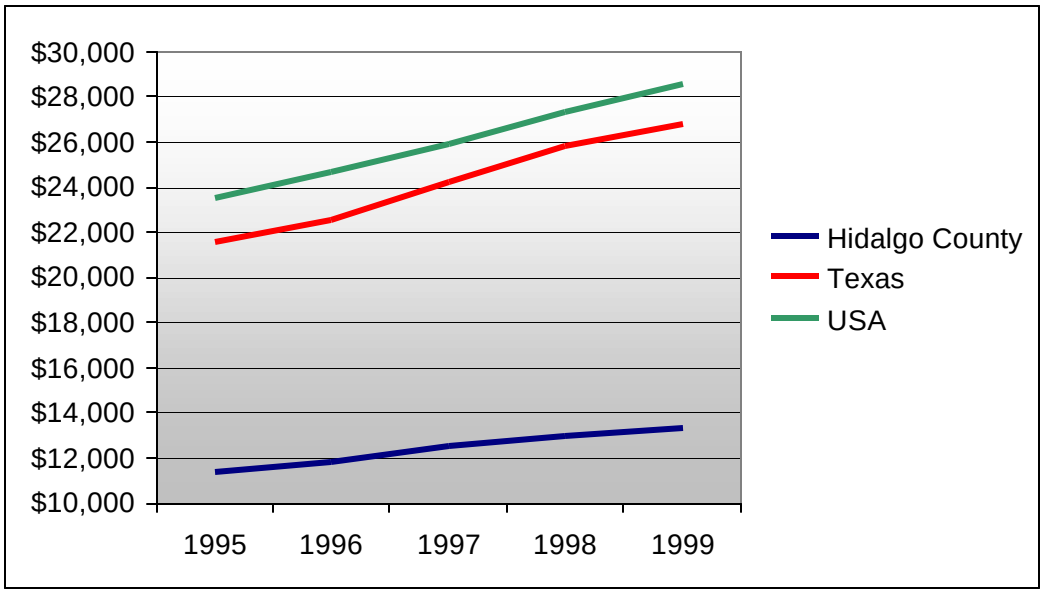
The current socio-economic picture in Hidalgo County and South Texas is defined by low income jobs and double-digit unemployment. Whether it is median household income (Figure 9), per capita income (Figure 10) or average earnings per job (Figure 11), the story is much the same: **There is a huge gap in income between Hidalgo County and the rest of Texas and the United States.**

Figure 9: Median Household Income, 1997



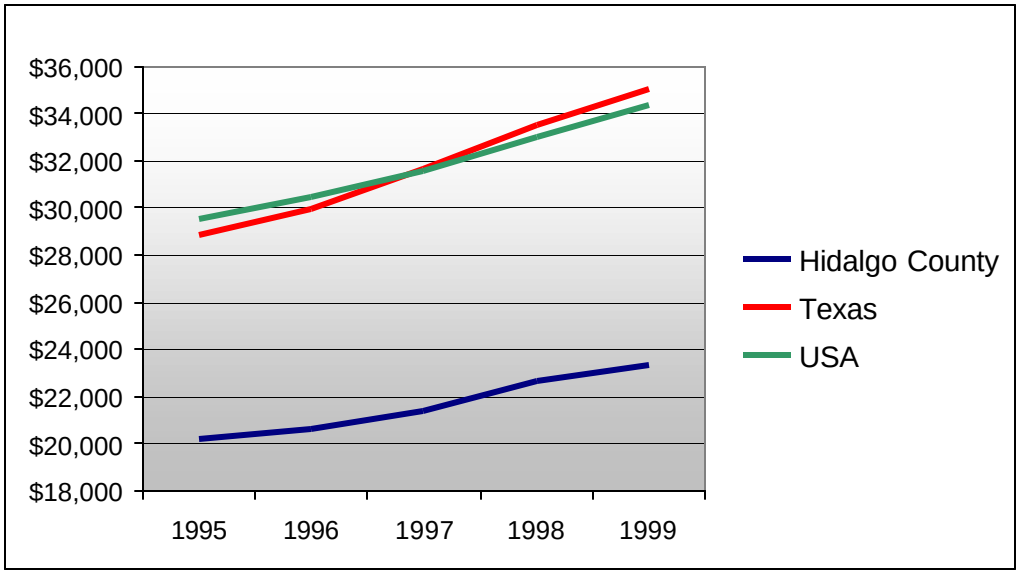
Source: U.S. Census Bureau, Housing and Household Economic Statistics Division, Washington DC

Figure 10: Per Capita Income, 1995-1999



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Washington DC

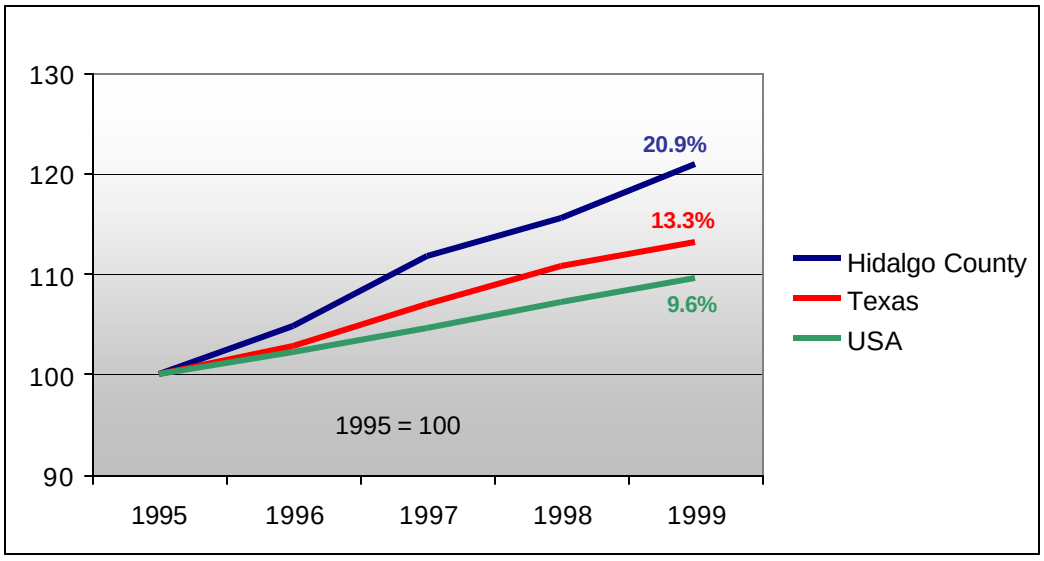
Figure 11: Average Earnings Per Job, 1995-1999



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Washington DC

Even though per capita income and average earnings per job grew in Hidalgo County in 1995-1999, the gap between Hidalgo County and the rest of Texas actually widened. In 1995 the difference in average earnings per job was $8,648, while in 1999 it was $11,746 (in 1995 an Hidalgo County average wage was 70% of that of Texas and in 1999 it had decreased to 66%). This was a period in which the job growth in Hidalgo County was actually quite robust, exceeding the state by 7.6% and the nation by 11.3% (Figure 12).

Figure 12: Job Growth, 1995-1999



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Washington DC

The conclusion for Hidalgo County is clear: **Job growth has been concentrated in sectors in which wages are significantly below the average of the rest of the state and the U.S.**

Data from the 1998-1999 Texas Occupational Wage Survey shows how the overall wages vary within the region and how they compare to those of the entire state (Table 1). (These data represent full time positions and so the averages are higher than the "earnings per job" data quoted earlier.)

Table 1: MSA Wages: All Occupations

	Annual Wage	Hourly Wages		Percentile	
		Mean	Median	25th	75th
Hidalgo County	$22,589	$10.86	$8.16	$6.05	$13.31
Cameron County	$22,526	$10.83	$8.10	$6.02	$12.96
Corpus Christi MSA	$25,834	$12.42	$9.79	$6.64	$15.78
Laredo MSA	$22,568	$10.85	$8.31	$6.11	$12.94
Texas	$28,350	$13.63	$10.64	$7.11	$16.81

Source: 1998-99 Texas Occupational Wage Survey, Texas Workforce Commission, Austin TX

Table 2 illustrates that Hidalgo County wages, even in technical fields, fall consistently below the state averages, but not as dramatically as the overall average earnings per job comparison, which show the county at 66% of the state average.

Table 2: Hidalgo County Wage Comparisons

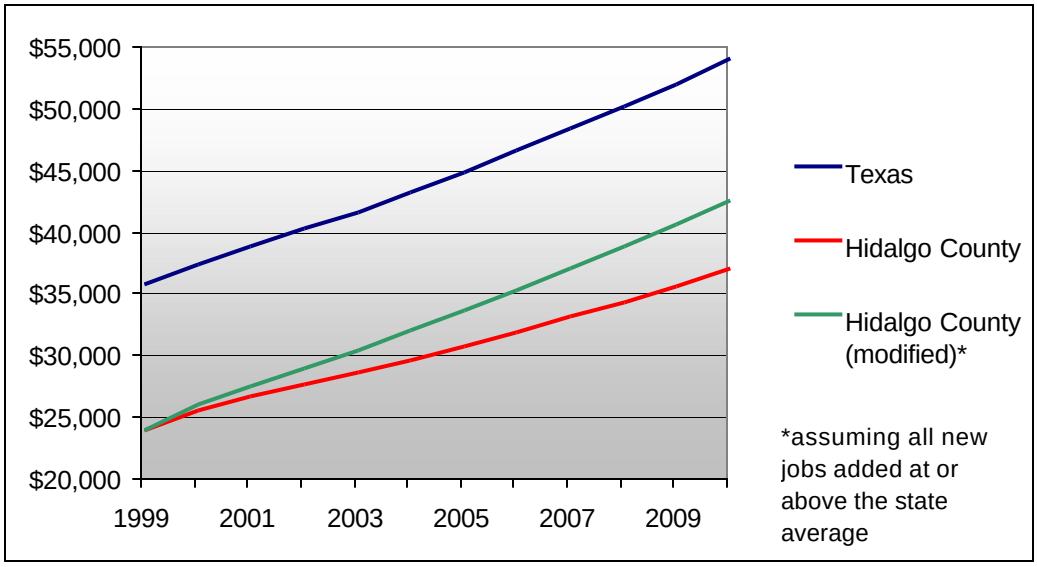
Occupation	Average Annual Wage Hidalgo County	Average Annual Wage Texas	Percentage Comparison
Human Resources Managers	$44,580	$51,830	86.0%
Administrative Services Managers	$36,920	$45,170	81.7%
Engr/Nat Sci/Comp/Info Sys Mgrs	$61,950	$72,900	85.0%
Industrial Production Managers	$50,020	$58,110	86.1%
Office/AdminSupport Supvrs/Mgrs	$28,170	$32,590	86.4%
Secretaries, Ex Legal or Medical	$17,760	$23,190	76.6%
Office Clerks, General	$15,630	$19,360	80.7%
Mechanical Engineers	$46,850	$59,630	78.6%
Elect & Electronic Techns	$29,870	$36,100	82.7%
Systems Analysts	$41,410	$51,710	80.1%
Database Administrators	$37,930	$49,310	76.9%
Computer Programmers	$39,250	$53,030	74.0%
Tool & Die Makers	$34,280	$34,590	99.1%
Machinists	$19,750	$27,860	70.9%
Sheet Metal Workers	$17,050	$24,400	69.9%

Source: 1998-99 Texas Occupational Wage Survey, Texas Workforce Commission, Austin TX

Hidalgo County needs more jobs (see the unemployment data below), but more importantly it needs jobs that pay at or above the state average and that afford career growth opportunites. **The county cannot build its economic future on being the low cost employment center for Texas and the United States**

Increasing the number of jobs in the county at the rate of the past five years and assuming state and county average earnings per job would also continue the same pattern would leave Hidalgo County with an average earnings per job that would be $17,027 below the state average in 2010 (68% of the state average). If, however, the "new" jobs could be added at or above the state average over that period of time, the gap in the average would be $9,712—a significant decrease in the current gap—and would bring the county's wages to 78% of the state average (Figure 13).

Figure 13: Projected Average Earnings per Job, 1999-2010



Source: U.S. Department of Commerce, Bureau of Economic Analysis, Washington DC

This is an extremely ambitious goal and can only be achieved by a radical change in the employment and industry profile of the region. **A path to that goal, advocated by this report, is to increase the number of technical and technical support positions in the local economy.**

The Potential Impact of Increased Hi-Tech Employment in Hidalgo County

Projections from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) indicate that Hidalgo County will add 87,760 jobs between 2001 and 2010, with the average earnings per job rising from the current $24,937 to $36,298. These projections look positive and exciting for the county until we realize that over the same period, the average earnings per job in the state of Texas are expected to rise from the current $36,664 to $53,324. Therefore, the current gap in average earnings per job between Hidalgo County and Texas of $11,697 would widen to $17,027 by 2010. In other words, without structural changes in the local economy the county and region will fall farther behind the rest of the state. One such structural change would be the building of a significant technology sector in Hidalgo County's economy.

What would be the impact of increased employment in technology-based enterprises? A very rough measure could be generated by making a few assumptions:

- 6.25% of all expected new jobs would be professional, hi-tech jobs (current salary of $55,000 and increasing at 4% a year)
- New, better paying jobs (at the Texas average) would be created either in support of the hi-tech positions or as seconday impact positions, at the multiplier rate of six times the number of hi-tech jobs
- The hi-tech jobs and 6.25% of the support/impact jobs would be increased employment over the projected number of jobs

Using these assumptions, Table 3 shows the impact:

Table 3: Potential Impact of Hi-Tech Employment

	BEA Projected Employment	BEA Projected Wage	New Hi-Tech Employment	Hi-Tech Support/Impact Employment	Projected Total Employment	Projected Hi-Tech Impacted Wage
2001	215,117	$25,969	475	2,851	215,770	$26,199
2002	223,154	$26,912	978	5,865	224,498	$27,384
2003	230,927	$27,891	1,463	8,780	232,939	$28,597
2004	239,886	$28,989	2,023	12,140	242,668	$29,964
2005	249,071	$30,092	2,597	15,584	252,642	$31,341
2006	258,467	$31,231	3,185	19,108	262,846	$32,761
2007	268,021	$32,505	3,782	22,690	273,220	$34,323
2008	277,243	$33,682	4,358	26,149	283,235	$35,780
2009	286,234	$34,910	4,920	29,520	292,999	$37,288
2010	295,273	$36,298	5,485	32,910	302,815	$38,965

These assumptions lead to the following results:

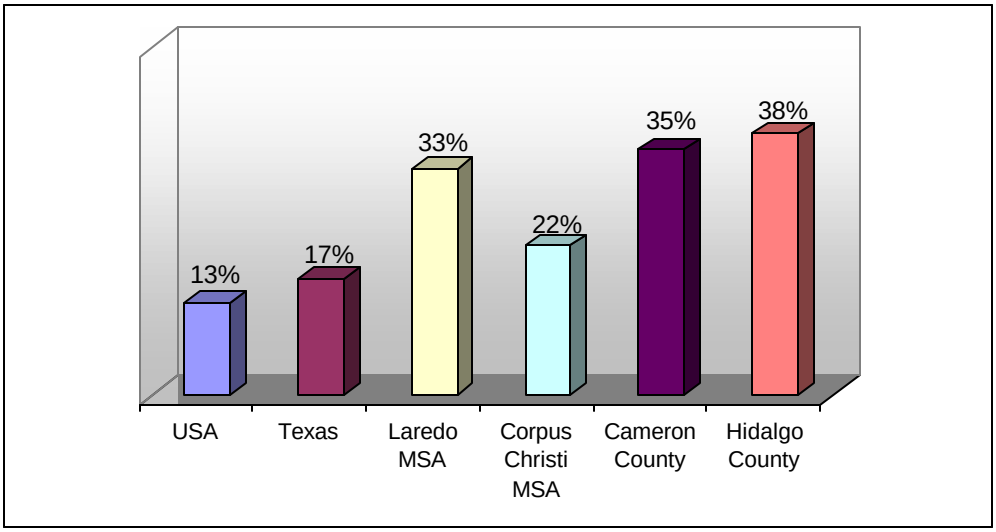
- 7,542 additional jobs over the BEA projections
- An increase of $2,667 in the average earnings per job
- In 2010, an additional $1.1 billion in wages
- Over the ten year period an additional $5.2 billion in wages

This dramatic impact would still have the average earnings per job gap between Hidalgo County and Texas widening, but only by half as much as the BEA projections would indicate.

Poverty and Unemployment

The net result of low wages is a population with a high number of people living in poverty. As defined by the federal government, "living in poverty" means falling below certain income thresholds based on the number of people living in a household. For example, in 1997 the poverty threshold for a family of four with two children under the age of eighteen was an annual income of $16,276. With a single wage earner, this translates to an $8.14 hourly wage (*Source: Current Population Survey, U.S. Census Bureau*). Figure 14 shows how pervasive poverty is in the three border MSAs of South Texas. Extrapolating to the 2000 population, the poverty rate of 1997 (38%) means that 216,396 people in Hidalgo County are currently living in poverty.

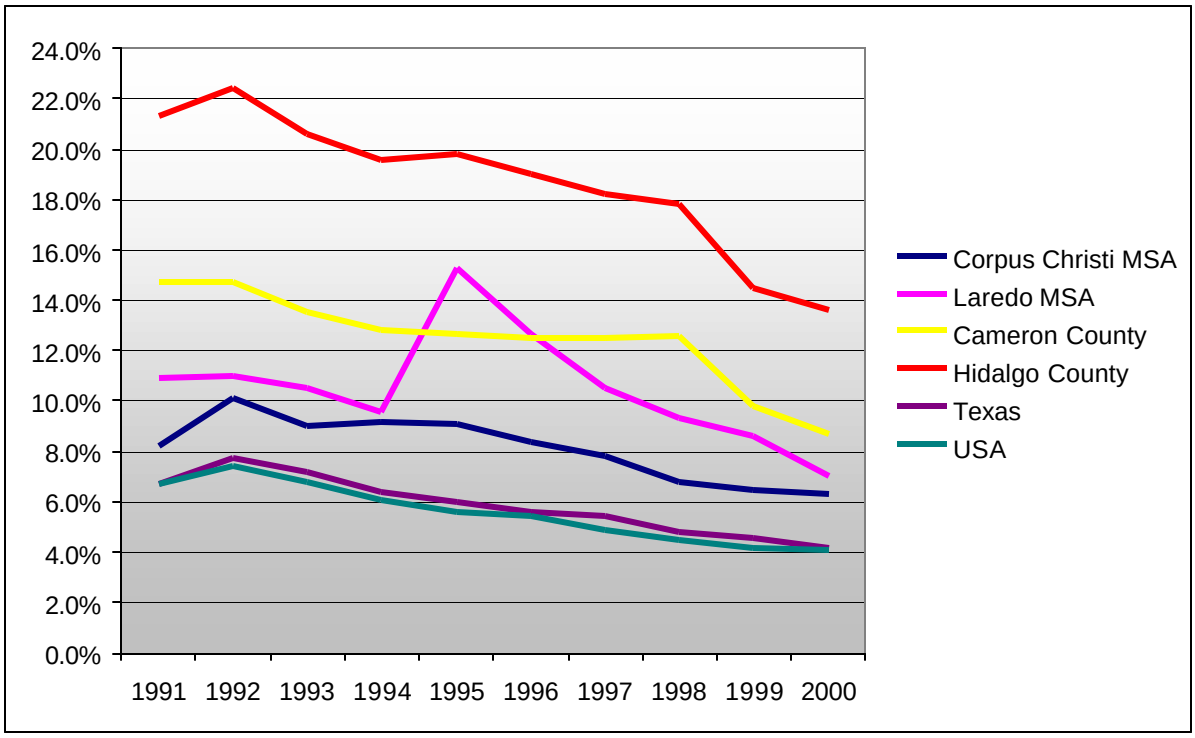
Figure 14: Percent Living in Poverty, 1997



Source: U.S. Census Bureau, Housing and Household Economic Statistics Division, Washington DC

Even though the unemployment rate in the Hidalgo County MSA has fallen from a high of 22.4% in 1992 to 13.6% in 2000, the rate remains the highest in the nation and has been so for the bulk of the last decade**. Bringing the unemployment rate down below 10% would have a very strong impact on Hidalgo County, but the ultimate factor in improving the economic life of the county and the region will be the creation of jobs that pay at a substantially higher level.**

Figure 15: Annual Unemployment Rates, 1991-2000



Source: 1991-2000 Unemployment Data, Texas Workforce Commission, Austin TX

Summary

With a median age of 27.2, against a state median of 32.3 and a national median of 35.3, the South Texas large, young population is its greatest asset and its greatest challenge. Young and Hispanic has generally meant underemployed in South Texas, and so the booming population in the region could very easily mean that the chronic problems of low wages and unemployment will only worse. With almost 40% of its population under the of twenty, South Texas can only be described as a of opportunity that the state cannot afford to pass by, is also a disaster waiting to happen unless the region the state marshal the commitment and resources to educate and train this potentially valuable work force. It is essential that the economic life of South Texas and Hidalgo County be reshaped so as to provide a foundation upon which its people can build lives for themselves that are in the mainstream of American life.

Bringing the unemployment rate down below 10% would have a very strong impact on Hidalgo County, but the ultimate factor in improving the economic life of the county and the region will be the creation of jobs that pay at a substantially higher level.

One component of that reshaping that offers promise is the building of sectors in the economy that are knowledge and technology based.

Educational Profile

In the Survey of Hidalgo County Business Leaders, four of the five most critical factors identified are related to education and workforce training:

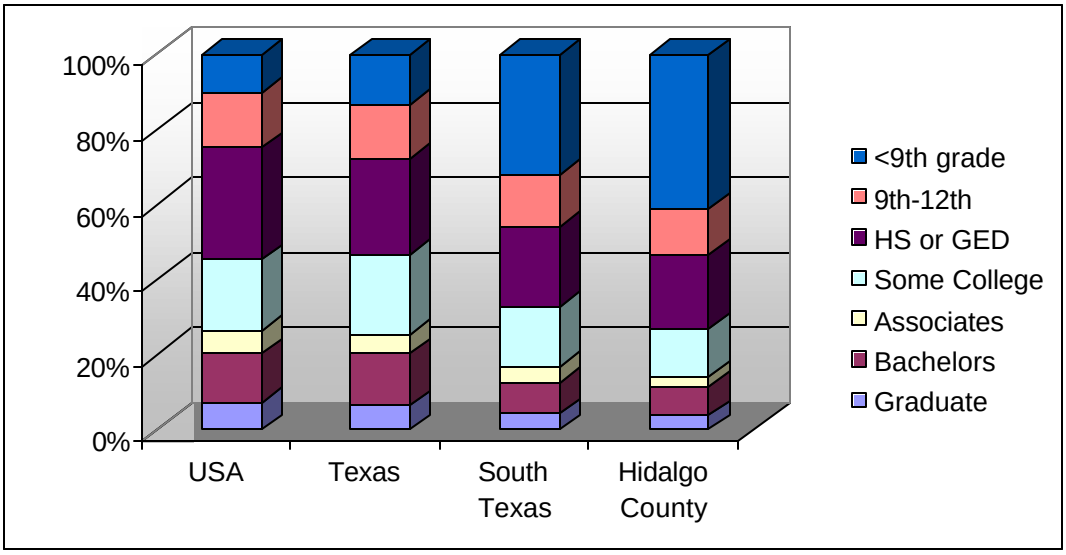
- Skill of the entry level workforce
- Quality of K through 12 education
- Quality of college and university education
- Skill of managerial and professional workforce

This section presents data on education and workforce training in Hidalgo County, from public school through graduate education.

Educational Attainment

Figure 16 shows 1990 Census data on the educational attainment levels of all U.S. residents twenty-five or older.

Figure 16: Educational Attainment of the Adult Population



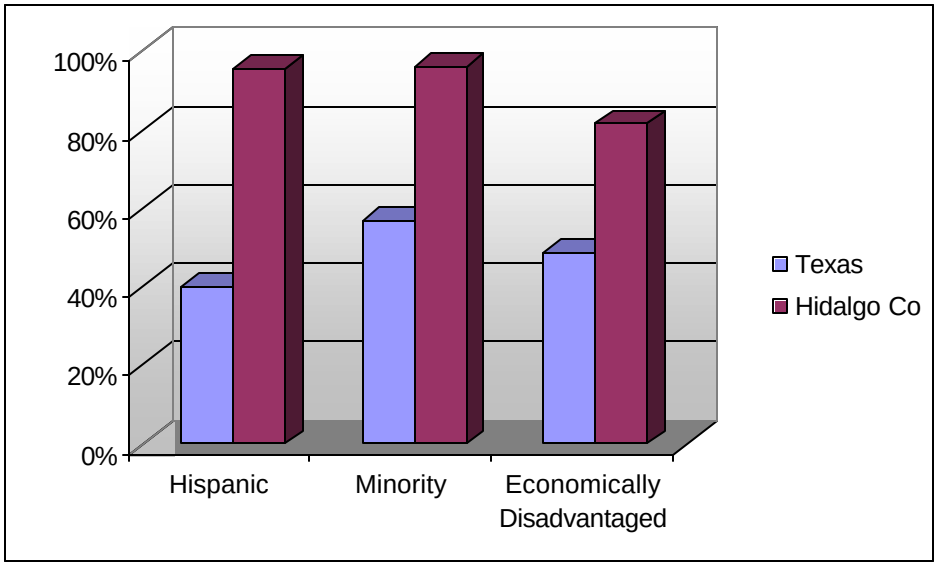
Source: 1990 Census of Population and Housing, U.S. Bureau of the Census, Washington DC

Dramatically improving the educational level of its population is the single most important task facing Hidalgo County. Eleven percent of Hidalgo County's adult population have a college degree, compared to 20% statewide and nationally. Fifty-three percent of Hidalgo County's adult population does not have a high school education, compared to 28% statewide and 25% nationally.

Public School Education

There are fifteen independent school districts in Hidalgo County, ranging in size from Pharr-San Juan-Alamo with 33 schools and 21,753 students to Monte Alto with two schools and 444 students. Additionally, there are five charter schools enrolling 885 students. In grand total, in the 1999-2000 school year there were 211 schools (31 high schools) enrolling 139,965 students, 3.5% of the state enrollment. Of that number of students, 96% are Hispanic and 81.5% are classified as economically disadvantaged. Only two school districts, McAllen and Sharyland, had fewer than 95% Hispanic students, and those same two were the only districts with fewer than 80% economically disadvantaged students. Figure 17 illustrates how the school population in the county compares, in 1999-2000, to that of the state of Texas with regard to ethnic distribution and economic disadvantage.[2]

Figure 17: Ethnicity and Economic Disadvantage in School Enrollment

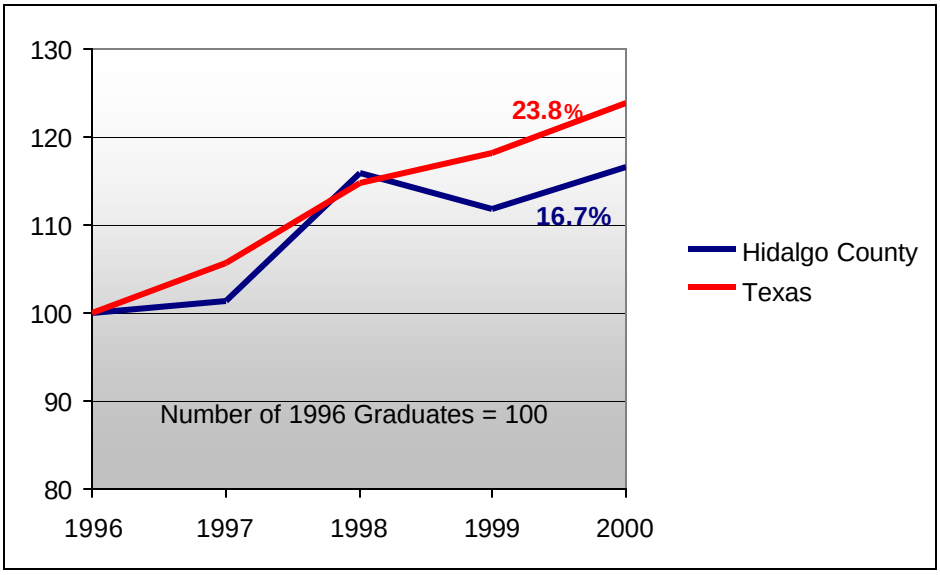


Source: 1999-2000 PEIMS, Texas Education Agency, Austin TX

In its *1999-2000 Academic Excellence Indicator System* (AEIS) data, the Texas Education Agency reports that there were 7,084 high school graduates in the county, representing 3.3% of the state total. The number of high school graduates in the county has increased in the past five years 16.7%, compared to a 23.8% increase statewide (Figure 18). This slower rate of growth is puzzling, given the fact that the population of Hidalgo County has increased approximately 22%, compared to approximately 11% statewide, during that same period. Whether this is an indicator of the magnitude of the dropout problem is not clear, but certainly more young people need to be finishing high school.

[2] . "Minority" being any student classified as not "white," and "economically disadvantaged" being any student eligible for any of several designated federal programs. These are classifications defined by the Texas Education Agency (TEA) and explained in their *Public Education Information System (PEIMS) Data Standards.*

Figure 18: Growth in HS Graduates, 1996-2000



Source: 1996-2000 PEIMS, Texas Education Agency, Austin TX

These graduates received one of six kinds of high school diplomas: minimum, IEP completion, recommended, advanced, honors, or distinguished achievement, the latter four being seen as college preparatory. Table 3 compares the distribution of kinds of diplomas in Hidalgo County to that of Texas.

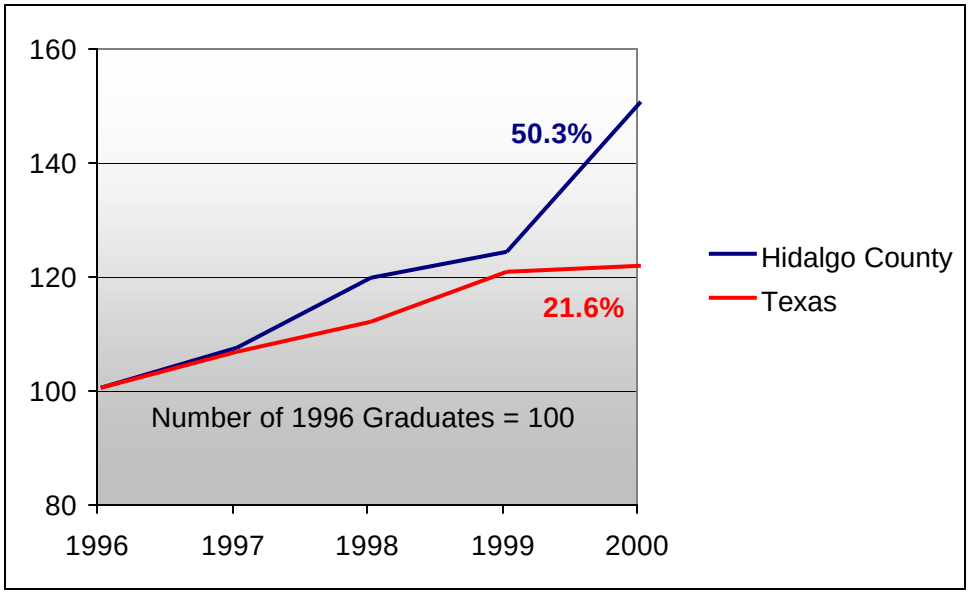
Table 4: High School Diploma Distribution, 2000

Type of Diploma (*College Preparatory Programs)	**Hidalgo County**	**Texas**
RECOMMENDED HS PROGRAM *	49.9%	34.9%
HIGH SCHOOL HONORS*	0.3%	0.3%
ADVANCED HIGH SCHOOL PROGRAM*	2.9%	0.9%
DISTINGUISHED ACHIEVEMENT *	5.0%	3.7%
COMPLETION OF IEP	2.5%	3.2%
MINIMUM HIGH SCHOOL PROGRAM	39.5%	56.9%

Source: 1999-2000 AEIS, Texas Education Agency, Austin TX

These data show that the percentage of students graduating with a college preparatory diploma in Hidalgo County exceeds that of the state (58% to 40%). It is also worth noting that the number of students graduated with more than the minimum program has increased 50.3% (compared to 21.6% for Texas) during the past five years (Figure 19). Such an increase is extremely encouraging and raises the prospects that more young people will enroll in, and complete, a post-secondary program, either in a four-year or two-year institution. Ultimately, this should lead to a work force that is better prepared for a knowledge based economy.

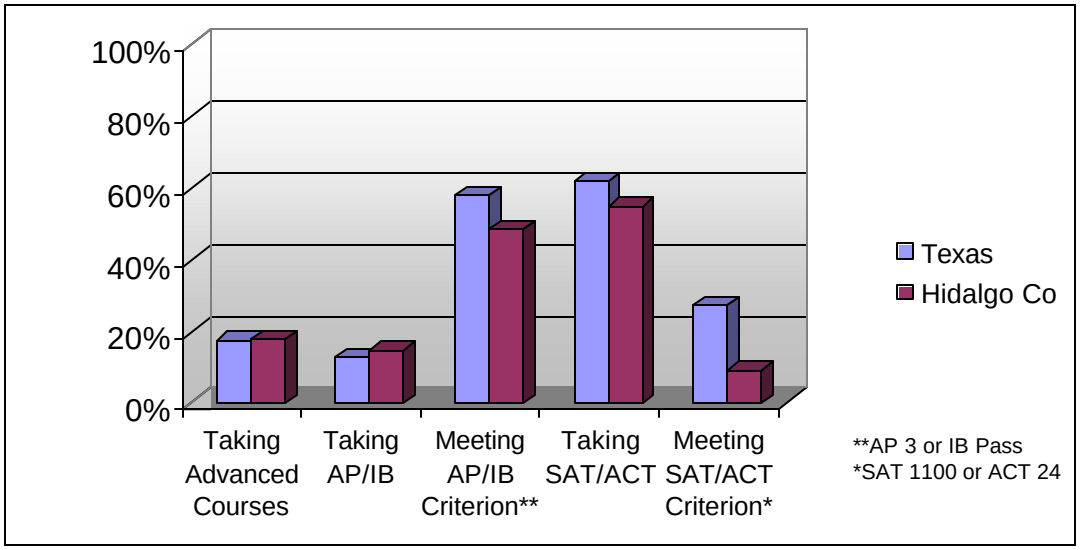
Figure 19: Growth in HS Graduates Completing a College Preparatory Program, 1996-2000



Source: 1996-2000 PEIMS, Texas Education Agency, Austin TX

Other measures of the quality of high school graduates include the percentage taking advanced courses, Advanced Placement (AP) courses, or International Bacculaureate (IB) courses and the percentage of students taking and reaching criteria on AP/IB tests or the standard college admission tests, the SAT and ACT (Figure 20).

Figure 20: Advanced Courses and College Admission Testing



Source: 1999-2000 AEIS, Texas Education Agency, Austin TX

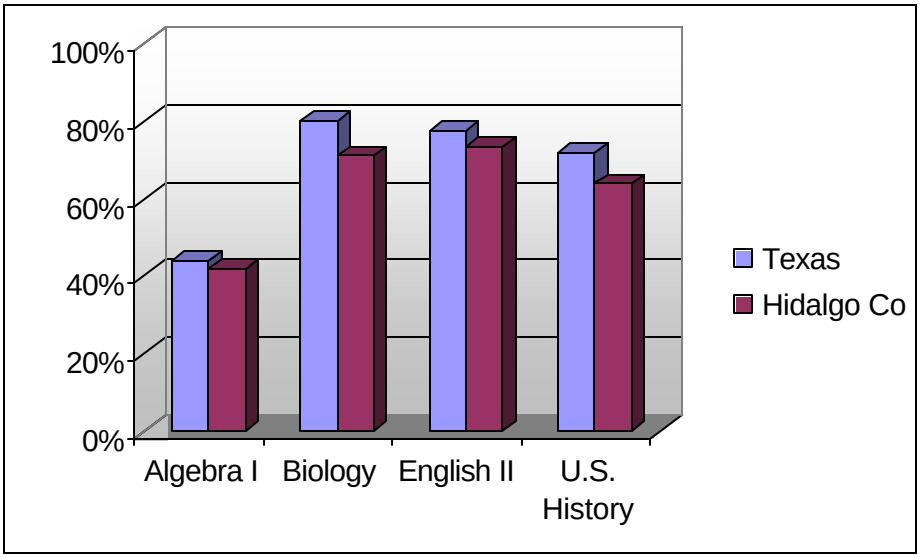
As with the high school diploma data, the actual advanced course taking (inlcuding AP and IB) meets or exceeds that of the state as a whole. Those students meeting criterion on the AP or IB

tests falls below that of the state (48% to 58%), however. The percentage of students in Hidalgo County taking a college admission test also falls below that of the state, though slightly (55% to 62%). Even though the SAT/ACT criteria set by the TEA is a high standard (the national average for the SAT is 1017 and for the ACT it is 21), **only 9% of the Hidalgo County students who took either of those tests met that criterion, compared to 27% statewide**. These measures seem to indicate that despite many completing more than the recommended program, Hidalgo Couny's high school graduates:

1) are not motivated to see the possibility of pursuing a college education, and
2) are **not as well prepared** for college as their contemporaries in the rest of the state.

The Texas Education Agency has initiated "end-of-course" examinations in Algebra I, Biology , English II, and United States History. These examinations are administered at the completion of each of the specific courses and are designed to measure how well each student has met the competencies of the course. As the chart below (Figure 21) indicates, Hidalgo County students track slightly below (in Algebra and English) to significantly below (in Biology and History) the students throughout the state. It should be noted that there is wide variation on the passing percentage on both the Algebra I exam (12.8% to 60.2%) and the United States History exam (36.8% to 82.8%) among the school districts of the county. The variation within the county on the other two examinations is markedly less.

Figure 21: End of Course Passing Percentages

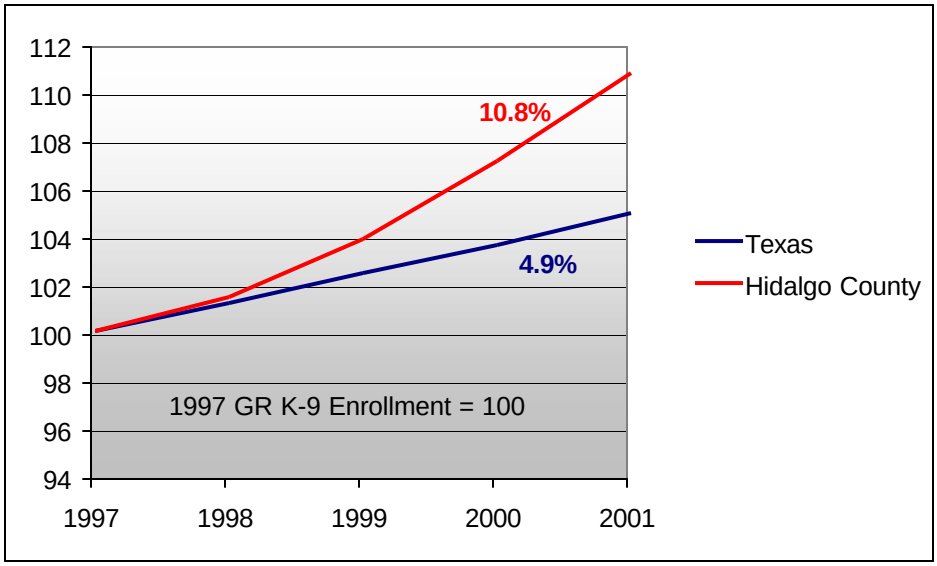


Source: 1999-2000 AEIS, Texas Education Agency, Austin TX

The very low passing percentage within the state on the Algebra I examination is of great concern. This indicates that Texas youngsters are not performing adequately in a course that is a foundation for further study in the sciences, mathematices, engineering, and technology, and are, as a group, relatively ill-prepared to pursue careers based on these disciplines. It is small comfort that Hidalgo County students have virtually the same pass rate as the rest of the state.

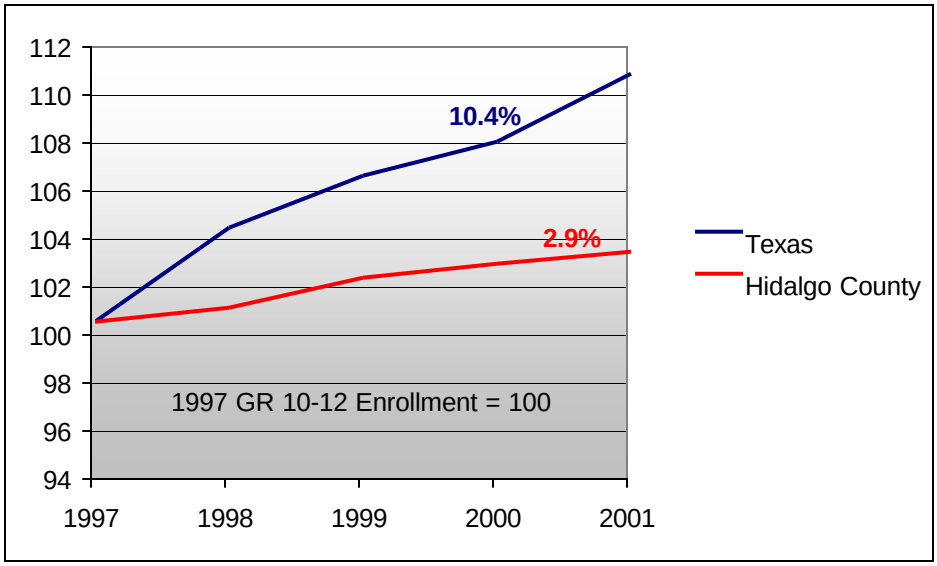
Enrollment growth in the public schools of the county shows a sharply different pattern in elementary and middle school from that of high school (Figures 22 and 23).

Figure 22: Enrollment Growth in Grades K-9, 1997-2001



Source: 1997-2001 PEIMS, Texas Education Agency, Austin TX

Figure 23: Enrollment Growth in Grades 10-12, 1997-2001

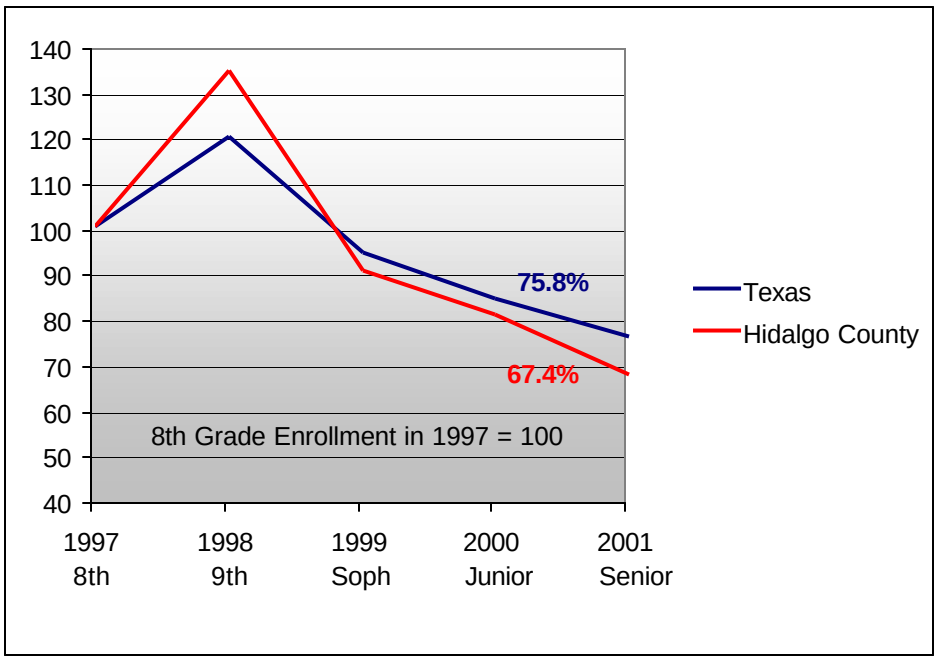


Source: 1997-2001 PEIMS, Texas Education Agency, Austin TX

In Hidalgo County, the growth in the lower grades from 1997-2001 has been 10.8% over the past five years, while the growth in the high school grades has only been 2.9%. These growth patterns are the opposite of those of the state. This is another indication that **a significant number of students in Hidalgo County are not completing secondary school**. As an example (Figure 24), the number of students in the high school class of 2001 can be compared to the number in the eighth grade in 1997: in Hidalgo County, the senior class enrollment in 2001 was

67.4% of the eighth grade enrollment in 1997, while in Texas, the 2001 senior class enrollment was 75.8% of the eighth grade enrollment in 1997.

Figure 24: Enrollment Change from 8th Grade to Senior Year, the Class of 2001



Source: 1997-2001 PEIMS, Texas Education Agency, Austin TX

It should be noted that attrition rate is not the same as dropout rate, since students may have finished high school early, completed a GED, or moved from the state (or county).

There are three magnet schools in the South Texas Independent School District that draw students from Cameron, Hidalgo, and Willacy Counties: The Science Academy (Grades 9-12 in Mercedes), The Teacher Academy (Grades 7-12 in Edinburg), and the South Texas High School for the Health Professions (Grades 9-12 in Mercedes). These schools offer specialized curricula for students with specific interests and aptitudes. Table 4 profiles student performance at these three schools, compared to Hidalgo County and the state of Texas (EOC means "end-of-course").

Table 5: Profile of the Magnet High Schools

	Science Academy	Teacher Academy	Health Professions	Hidalgo County	Texas
Enrollment, 9-12	630	375	688	---	---
EOC Algebra I	62.5%	70.4%	75.5%	42.0%	43.9%
EOC Biology I	95.5%	99.0%	94.0%	71.2%	80.3%
EOC English II	84.2%	98.9%	98.2%	73.8%	77.7%
EOC US History	89.5%	82.7%	94.8%	64.0%	72.1%
Advanced Courses	65.3%	27.2%	37.4%	17.7%	17.5%
SAT/ACT Criteria	61.0%	12.5%	31.0%	9.1%	27.2%
SAT Average	1128	935	1032	880	989
ACT Average	24.6	19.6	21.5	17.1	20.2
Graduates	114	63	149	---	---
College Prep Grads	72.8%	88.9%	95.3%	58.0%	39.8%

At these specialized schools, the students perform well above the average for the county, and with the exception of SAT/ACT Criteria at the Teacher Academy, also exceed the state average significantly. The magnet schools provide an excellent opportunity for the nearly 1700 high school students who attend them. Several of the larger school districts are investigating strategies for incorporating the magnet school concept within their districts.

Summary

There is no more important resource for this region than its young people and the single most important factor for the development of this resource is a quality and well considered public school education. The challenges facing the public schools in Hidalgo County are clear and serious: more young people must finish high school and more young people must finish high school prepared for post-secondary education, whether that be in the university, community college, or direct workforce training programs.

Strides have been made by the significant increases in the percentage of high school graduates completing a college preparatory curriculum and in the percentage participating in advanced placement (AP) course work. These strides must be matched by progress in reducing the loss in enrollment that takes place during the high school years and in improving the performance of students relative to college admission criteria.

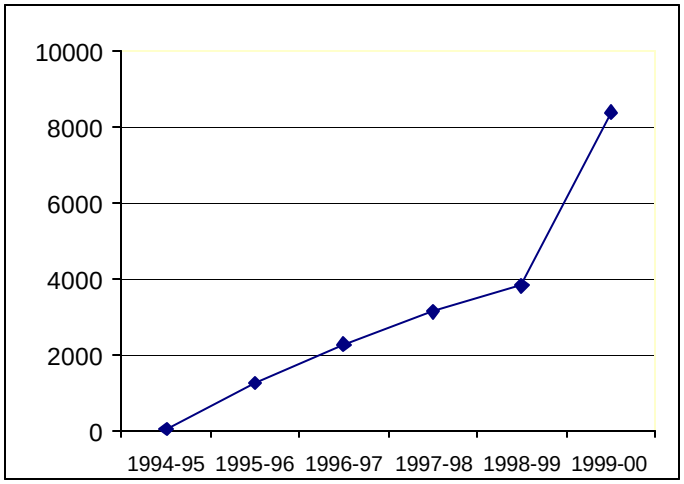
It is too easy to stand outside the school system and demand change and improvement from the schools. It is absolutely critical that the community at large, and the business community in particular, become involved in improving the quality of public school education. In a very real sense, the public gets the schools that it wants, that it is willing to directly work for, and that it is willing to pay for. The challenges facing the public schools must be taken up by the public; they cannot simply be voiced by the public to the schools.

Tech Prep of the Rio Grande Valley

Tech Prep of the Rio Grande Valley, Inc. (Tech Prep Inc.) is a Texas nonprofit and federal 501(c)(3) corporation whose members include 31 independent school districts, 7 colleges and universities, the Region One Education Service Center, and several professional and community-based organizations. Tech Prep Inc.'s vision is to enhance economic development of the Rio Grande Valley by being the definitive catalyst for regional partnerships to fulfill employers' demand for a prepared workforce that can compete in an evolutionary, knowledge-based economy. Tech Prep Inc.'s mission is to form working partnerships that leverage regional resources to provide reality-based learning for achieving a higher level of competence in the Valley's workforce.

Tech Prep Inc. serves Cameron, Hidalgo, Starr, and Willacy Counties, promoting initiatives that facilitate the development of a seamless education-training system, starting in kindergarten and continuing through college and beyond. Tech Prep Inc. is working to strengthen the region's education and training infrastructure because an educated workforce is the key to economic prosperity. Student successes demonstrate that the system is working.

Figure 25: Students in Tech Prep, 1994-2000



Statistics provided by the Texas Higher Education Coordinating Board and the Texas Education Agency reflect that the number of secondary Tech Prep students in the Rio Grande Valley grew from 60 in 1994-95 to 8,407 in 1999-2000 (Figure 25).

State reports indicate that Rio Grande Valley Tech Prep students' standardized test scores (TAAS scores) are better than those of all other students in reading, writing, and mathematics. These reports indicate that statewide, Tech Prep students score better than all other students in several other key areas:

- Hispanic Tech-Prep students average dropout rates 0.93% per year lower than other students
- Hispanic Tech-Prep students average attendance rates l% per year higher than other students
- Tech-Prep students enroll in college at higher rates than other students (Figures 26 and 27)

Figure 26: Percent of Students Pursuing College Prep Program, 1994-99

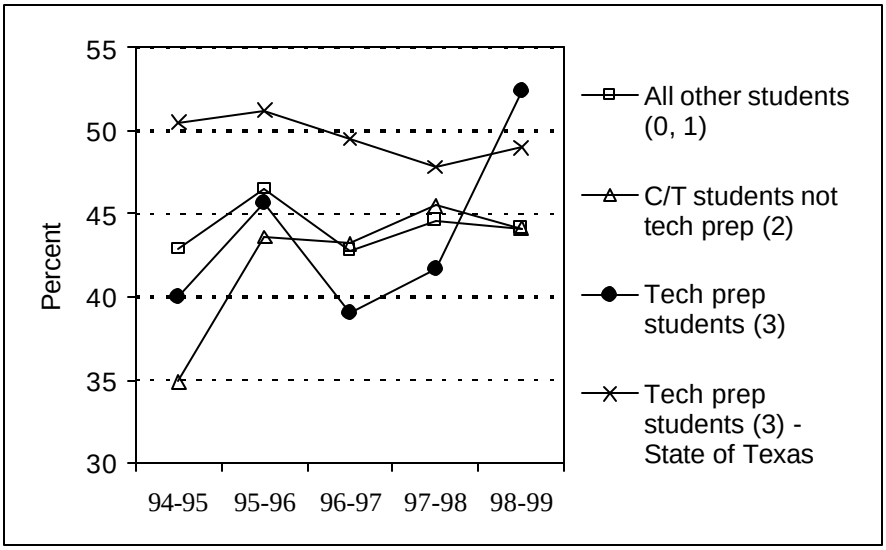
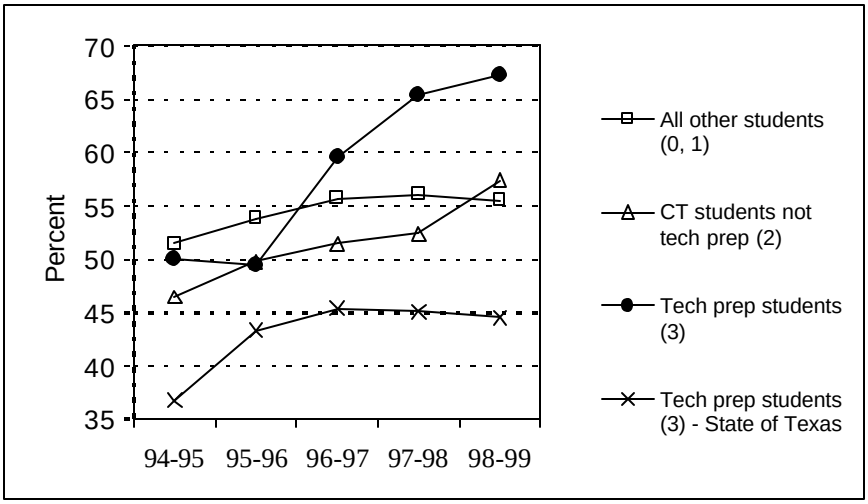


Figure 27: Percent of Students Pursuing Higher Education, 1994-99



Tech Prep Inc. leads several initiatives, including an annual labor market information study, Tech Prep Texas Scholars, a Manufacturing Technologies Laboratory program, the Lower Rio Grande Valley Counselors' Network, the Lower Rio Grande Valley S-TEAM Network, Shared Advisor initiatives, a credit-tracking system designed to facilitate student outreach, *Careers in Action* curriculum (**which has been endorsed by local employers including the McAllen Economic Development Council)**, annual secondary-postsecondary curriculum-alignment meetings, and other initiatives.

Tech Prep Texas Scholars is a student-recognition initiative that was developed in partnership with the Texas Business and Education Coalition. Almost 5,000 Rio Grande Valley high school students have graduated as *Tech Prep Texas Scholars* in the two years that the program has been in existence**. In May 2001, there were 2,973 *Tech Prep Texas Scholar* graduates, with 2,073 of those graduates coming from schools located in Hidalgo County.** *Tech Prep Texas Scholar* graduates are eligible for *Dr. Lauro F. Cavazos Tech Prep Scholarships*—named in honor of former U.S. Secretary of Education Dr. Lauro F. Cavazos, the first Hispanic ever to hold a U.S. Cabinet-level position and a supporter of Tech Prep Inc.'s work in the Valley. *Tech Prep Texas Scholars* high school graduates receive special honors–certificates and honor cords to be worn at graduation–and become eligible to compete for the Dr. Lauro F. Cavazos Tech Prep scholarships. Scholarships are supported by donations of local supporters, including the Valley's colleges and universities, which offer Tech Prep Cavazos scholarships as part of work to build a regional "lifelong learning" system. Some scholarships are available to high school students entering college for the first time, and others are for individuals who have earned associate degrees from Tech Prep and have now reached a point in their careers at which they need to upgrade their associate degrees to baccalaureate degrees. Some of the *Cavazos Scholarship* recipients are as follows:

- David Leal, a May 1999 graduate of McAllen's Nikki Rowe High School, who graduated third in his high school class. Leal took articulated courses in computer-aided design and could have taken his Tech Prep scholarship to either South Texas Community College or Texas State Technical College. He was, however, recruited by Rice University and chose to study electrical engineering there. Born in Mexico and the youngest of four children, Leal is now a junior at Rice and has now completed internships at GE-Lighting in Ohio and IBM in Austin.

- Hector Casas, Jr., a May 2000 graduate of Nikki Rowe High School, McAllen Independent School District, who received a $5,000 scholarship and is now a sophomore pre-med major at St. Mary's University in San Antonio. Casas states, "Thanks to Tech Prep, many students all over the Rio Grande Valley were able to discover and experience their career goals, as I have throughout my entire high school career; . . . Someday, after I become a specialized physician, I wish to … have the honor to tell students that I once sat where they are now, and that Tech Prep fulfills many dreams and aspirations. . . my dream is to come back to my community and repay it by awarding educational scholarships like Tech Prep of the Rio Grande Valley, Inc."

- Monika Galvan, a May 2000 graduate of Harlingen High School South, Harlingen Consolidated Independent School District, who received a $4,000 scholarship donated

by Texas State Technical College. Galvan ranked 24th in a class of 377 and participated in many high school activities. Galvan is studying dental hygiene at Texas State Technical College, is a student member of the Tech Prep Inc. Board, and will graduate in May 2002.

- Alfonso Guillen III, February 1999 graduate of Texas State Technical College, Harlingen, who received a $3,000 scholarship donated by The University of Texas-Pan American, Edinburg. Guillen completed an Associate of Applied Science degree in Building Construction Technology and has worked in the private sector utilizing the training he received in this Tech Prep program at TSTC. Guillen, whose long-term goal is to become a teacher, will graduate in May 2002.

- Amy Yvonne Dorsett, an associate degree graduate of Texas Southmost College, Brownsville, was named recipient of a $3,000 scholarship donated by The University of Texas at Brownsville. Dorsett completed her baccalaureate degree in Criminal Justice at UT-Brownsville in one. Dorsett, who is a single parent, hopes to attain master's and doctorate degrees in Criminal Justice, to become one of the few female U.S. Deputy Marshals, and "one day to be a powerful influence to all young females of school age."

Tech Prep Inc.'s Manufacturing Technologies Laboratory (MTL) has introduced over 17,000 Rio Grande Valley middle- and high-school students to applications of mathematics and science plus the lucrative career opportunities in high-tech careers since 1993. The MTL is a mobile laboratory that is used for teaching and learning computers, computer design, computer programming, and computer manufacturing through the use of mathematics and science with real-life, hands-on applications. The goal of the MTL program is to promote the pursuit of higher-level math and science course work and an interest in manufacturing careers among middle- and high-school students. By enrolling in the MTL program, students can learn highly technical skills. Students learn to use the different computer programs from teachers who have received special training for the program. All equipment in the MTL (robot, lathe, and milling machines) is computerized. Students work with three programs: CAD (computer-aided design), CAM (computer-aided manufacturing), and CNC (computer numeric control). The CAD program is used to design projects of interest to the students. The project may be an automobile part, an airplane part, or just the student's initials. Once the CAD design is complete, the design is then given to CAM. CAM then converts the CAD design into a CNC program. A student can write his/her own CNC program or let CAD/CAM do it for him/her.

Students, parents, and teachers are all enthusiastic about students' experiences in the MTL program. Several Hidalgo County school districts (Edinburg, Mission CISD, Mercedes, Valley View, Monte Alto, and Pharr-San Juan Alamo ISD) have utilized MTL services for a number of years, and McAllen ISD staff were so enthusiastic about the program that the district acquired its own equipment. Because of the *maquiladora* industry in the Valley, Tech Prep Inc.'s MTL program is an important program for Valley youth.

Tech Prep Inc.'s annual labor market study is conducted in partnership with workforce development boards, the council of governments, economic development organizations, chambers of commerce, and individual employers and shared with educators, workforce boards,

economic development organizations, and other interested parties. Employer forums built into development of the study provide a venue for employers to give input to representatives of the education and workforce-development systems. Approximately 350 reports are distributed each year, supplemented by thousands of smaller brochures given to parents, students, and educators annually. The report is divided into sections so that data for each county can be viewed separately. This allows Hidalgo County economic development and workforce board staff to access data that they need for their work. The most recent labor market study can be viewed on Tech Prep Inc.'s website at www:techprepRGV.com.

The Lower Rio Grande Valley Counselors' Network and the Lower Rio Grande Valley S-TEAM (Support Team) Network provide thousands of educators each year with labor market information as well as training in counseling and implementation techniques to support Tech Prep Inc.'s strategic initiatives. Recognition programs for teachers and counselors contribute to the success of these initiatives.

Annual curriculum-alignment meetings allow hundreds of secondary and postsecondary educators to meet together to discuss curriculum offerings and to plan for the coming year, and Tech Prep Inc.'s *Careers in Action* curriculum is an employer-endorsed curriculum for kindergarten through eighth grade designed to encourage youngsters to learn about local industries as well as the relationship between education and personal economic success.

Shared Advisor initiatives at colleges and an in-house credit-tracking system maintained by Tech Prep Inc. support student outreach to encourage high school graduates to participate in the system and enter the college programs available to them.

> Tech Prep Inc.'s goals for the near future are to work with local universities to create additional baccalaureate opportunities that will allow graduates of Tech Prep associate degree programs to continue their educations without starting over. In addition, Tech Prep Inc. plans to expand its partnerships with organizations serving adults so as to create a seamless system in which not only youth, but also adults who must be retrained or who must upgrade their skills to succeed in the workforce, can benefit from Tech Prep Inc.'s initiatives.
>
> Executive Director of Tech Prep, Patricia G. (Pat) Bubb

Community College Education

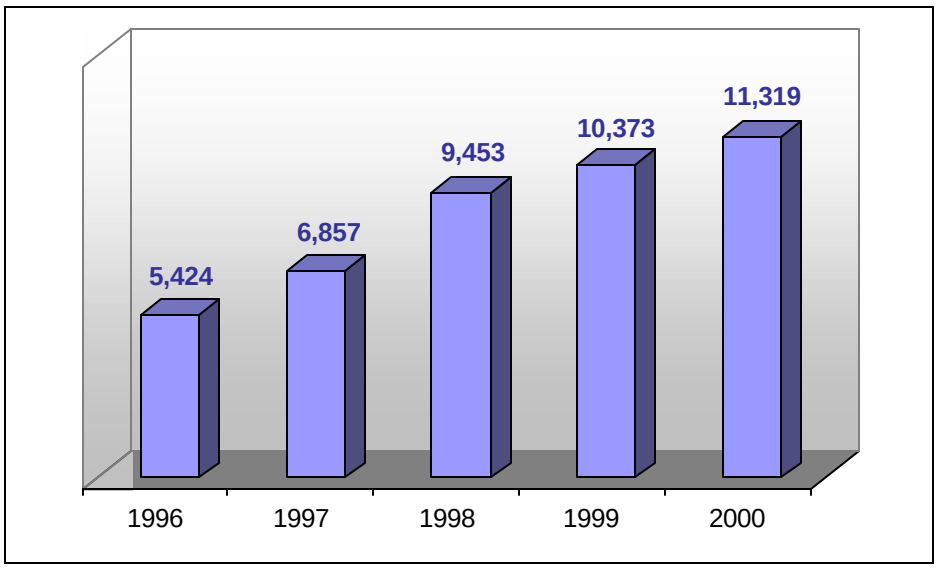
South Texas Community College (STCC), the Valley's newest higher education institution, is a comprehensive public community college established to address the diverse educational and training needs of Hidalgo and Starr Counties by empowering a pluralistic society of learners with the knowledge and skills necessary to enhance the quality of their lives and to promote the development of their communities.

This mission is captured in the phrase, "Transforming a Region's Workforce One Student at a Time." Commonly mentioned workforce, education, and training challenges facing Hidalgo and Starr Counties include:

- Too many high school dropouts with contributing factors for Hispanics that include poor study habits, instruction not tailored to student cultures and needs, family and job-related pressures including childcare, inadequate finances, poor peer support, low self-esteem, lack of self-confidence, and academic underachievement.
- Lack of interest, motivation, and mentors for college prep courses
- Lack of funds to prepare for and to attend college
- Lack of career oriented local job prospects after graduating from college
- Talent leaving the area for higher paying jobs
- Lessening the Digital Divide based on education and employment opportunities
- Lack of job skills to move from traditional low tech assembly line work (such as textiles) to team oriented, technology intensive work

To meet these challenges, many of which of the University of Texas – Pan American was not in a position to deal with, STCC opened its doors in 1993 for 1,000 students, and in the Fall 2000 semester the college had over 11,000 students making it the fastest growing higher education institution in the state (Figure 45). Ninety-five percent of STCC students are Hispanic. All programs at STCC are designed, developed, and implemented based on workforce needs identified through labor market research. STCC has 259 full-time faculty and 1,300 employees with an annual payroll of $29,000,000.

Figure 28: STCC Enrollment, 1996-2000

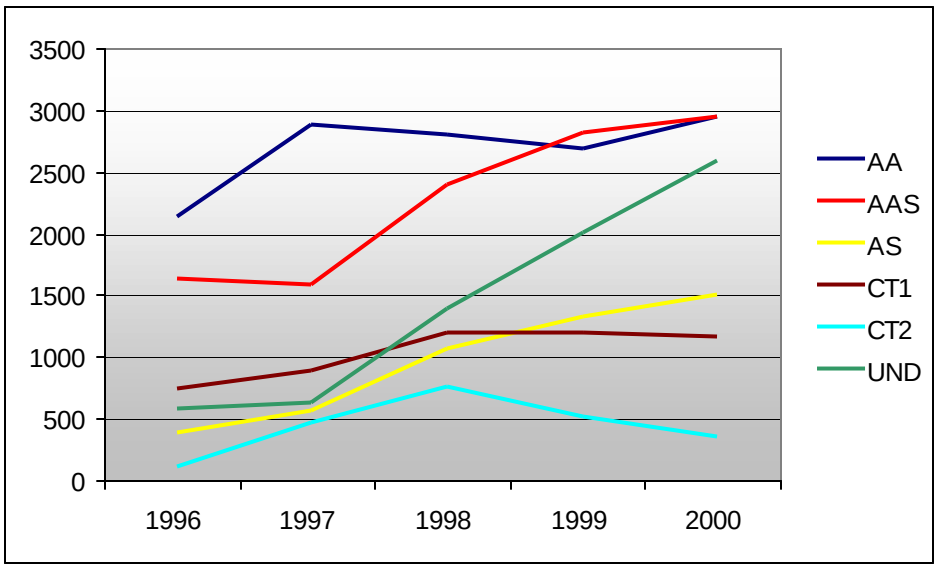


Source: 2001 South Texas Community College Fact Book, McAllen, TX

STCC offers three types of associate degree programs: Associate of Arts (AA), Associate of Science (AS) and Associate of Applied Science (AAS). The first two (AA and AS) are designed to prepare the student for transfer into a baccalaureate program at a four year institution, while the third (AAS) is primarily seen as a terminal program leading directly to employment. In addition, STCC offers a multitude of certificate programs (either CT1 or CT2) in fields ranging from culinary arts to the health professions to precision manufacturing. These programs are offered in four divisions: Business/Math/Science, Liberal Arts and Social Sciences, Nursing and

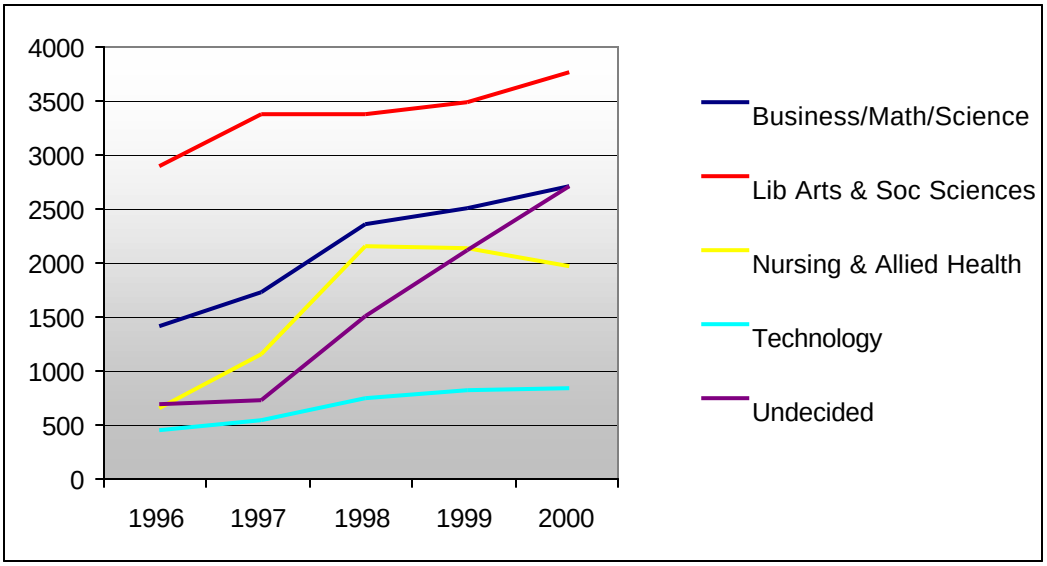
Allied Health, and Technology. Figures 29 and 30 illustrate how the enrollment at STCC has been distributed amongst the programs and divisions over the past five years (those students who are enrolled without declaring a program are designated by UND).

Figure 29: STCC Enrollment by Degree, 1996-2000



Source: 2001 South Texas Community College Fact Book, McAllen, TX

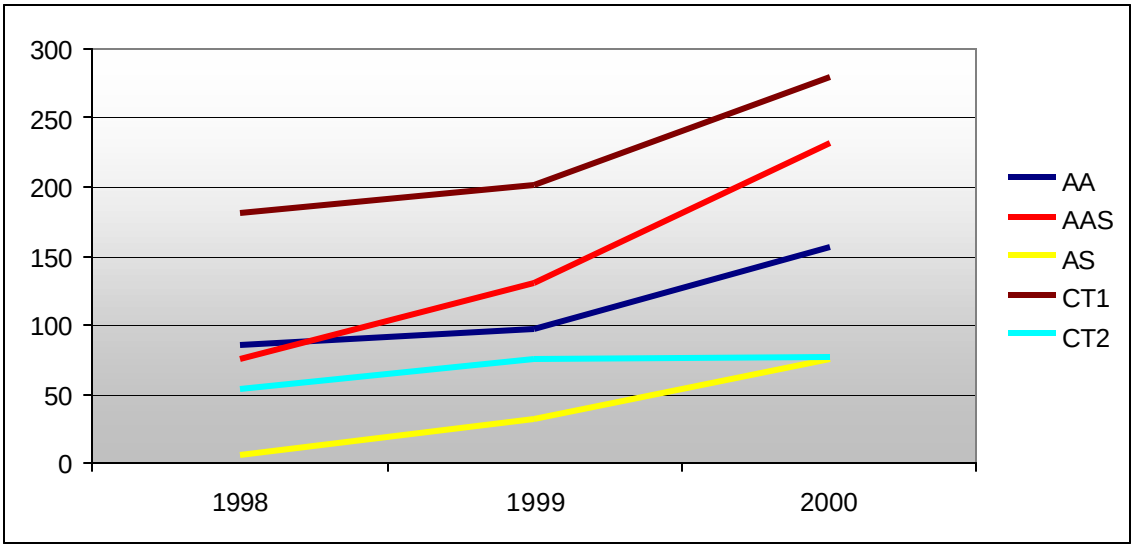
Figure 30: STCC Enrollment by Division, 1996-2000



Source: 2001 South Texas Community College Fact Book, McAllen, TX

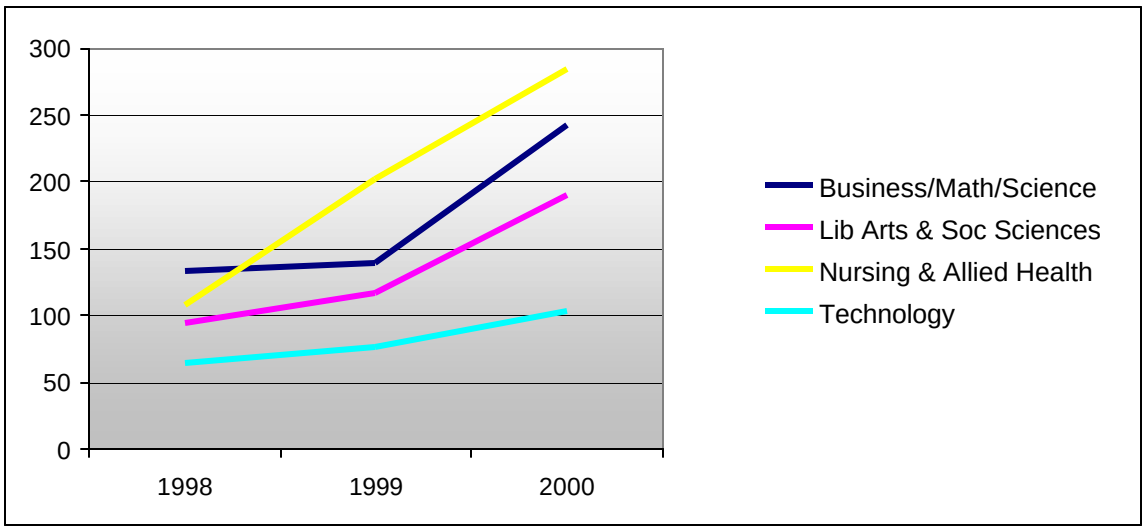
Even though the enrollment is quite large, the number of students graduating with either an associate's degree or a certificate is relatively modest, matching the national pattern of low completion rates in community college. In 2000, there were 820 graduates (464 associates and 356 certificates). This number has been growing (Figures 31 and 32).

Figure 31: STCC Number of Graduates by Degree, 1998-2000



Source: 2001 South Texas Community College Fact Book, McAllen, TX

Figure 32: STCC Number of Graduates by Divsion, 1998-2000



Source: 2001 South Texas Community College Fact Book, McAllen, TX

Fifty-eight different programs had graduates in the last three years. Table 5 shows the ten largest programs, in terms of numbers of graduates, from 1997-98 to 1999-2000:

Table 6: Ten Largest STCC Programs, Number of Graduates, 1998-2000

Degree Program	Division	Degree	Graduates
Vocational Nursing	Nursing & Allied Health	CT2	205
Social & Behavioral Sciences	Lib Arts & Soc Sciences	AA	143
Teacher Preparation 2+2	Lib Arts & Soc Sciences	AA	127
Patient Care Assistant	Nursing & Allied Health	CT1	119
Heating, Ventilation & AC	Technology	CT1	87
Accounting	Business/Math/Science	CT1	78
Word Processing Clerk	Business/Math/Science	CT1	70
Accounting	Business/Math/Science	AAS	58
Health & Human Services	Lib Arts & Soc Sciences	AAS	55
Associate Degree Nursing	Nursing & Allied Health	AAS	46

Source: 2001 South Texas Community College Fact Book, McAllen, TX

As indicated earlier, the SMET disciplines (Science, Mathematics, Engineering and Technology) are in a critical state and the number of graduates must increase if Texas and the nation are to meet the technology workforce needs of the early 21st century. Table 6 indicates the number of graduates in SMET-type programs at STCC in the last three years.

Table 7: STCC Graduates in SMET Programs, 1998-2000

Degree Program	Division	Degree	Graduates
Electronic Equipment & Computer Maintenance	Technology	CT1	36
Computer Aided Drafting & Design	Technology	CT1	34
Biology	Business/Math/Science	AS	33
Networking Specialist	Business/Math/Science	AAS	31
Computer Specialist	Business/Math/Science	AAS	30
Electronic Equipment & Computer Maintenance	Technology	AAS	22
Computer Information Systems	Business/Math/Science	AS	17
Health Information Technology	Nursing & Allied Health	AAS	16
Mathematics	Business/Math/Science	AS	9
Precision Manufacturing	Technology	CT1	9
Chemistry	Business/Math/Science	AS	7
Computer Science	Business/Math/Science	AS	5
Engineering	Business/Math/Science	AS	5
Precision Manufacturing	Technology	AAS	4
Physics	Business/Math/Science	AS	1
Industrial Systems Maintenance	Technology	CT1	1
Manufacturing Technology	Technology	CT1	1

Source: 2001 South Texas Community College Fact Book, McAllen, TX

Concurrent Enrollment Program

Through the Concurrent Enrollment Program, STCC working with local high schools to lessen high drop out rates, to better prepare students for college and to be qualified to work in value added and career oriented jobs. The program encourages high school students, during the junior and senior years, to take courses at STCC and to work to become certified in a range of technical specialties by the time they graduate from high school. This helps them to be qualified for well-

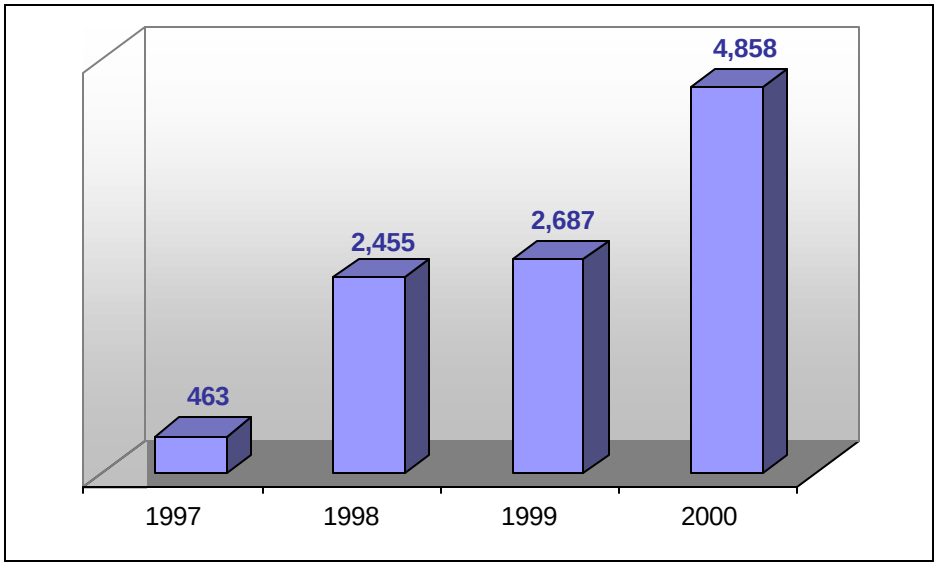
paying jobs and it also motivates them to complete their college education. In 2001 there were 1,457 students from 27 regional high schools enrolled in the Concurrent Enrollment Program.

Community Workforce and Industry Training

STCC currently has partnerships with about 70 regional private sector employers to contribute to workforce development. The Partnership is organized under 10 Institutes --- such as Manufacturing, Telecommunications & Telemarketing, Health Professionals, Information Technology, and Business Services --- designed for life-long learners who want to upgrade their skills, change careers, attain entry level jobs, and seek personal enrichment and professional development. 7,775 residents from Hidalgo and Starr counties have been trained in this program and training grants have increased from $2.2 million in 2000 to $3.2 million in 2001.

> We do workforce training one company at a time. For example, a plastics manufacturing company recently needed workers to work on teams of 5-6 employees. This required softer skills such as team building and communication skills as well as computer skills – this is far different than the traditional repetitious manufacturing line where workers did their piece work and simply passed it along – they were not encouraged to communicate. It is a different work environment now and the workers also need to be computer literate.
>
> Carlos Margo, Manager
> Apprenticeship Training STCC

Figure 33: STCC's Partnership for Business and Industry Training, 1997-2000



Source: 2001 South Texas Community College Fact Book, McAllen, TX

IT Working Connections Grant

An IT Working Connections program was funded at STCC with the goal of promoting retention and success of underrepresented, specifically Hispanic, students in IT jobs. Sixty-nine participants completed the program in areas such as computer science, information systems, networking specialists, and electronics repair and computer maintenance. These participants

earned GPAs of 2.8, 45% going for a bachelor degree, and 40% have been placed in higher paying jobs. These metrics were achieved through a rigorous program of weekly tutoring and study groups, study skills and career workshops, internships, and faculty advising. Community support included business & industry partnerships for the participants. Faculty and staff development grants trained STCC instructors on the latest IT concepts as well as on innovative instructional strategies and on local Hispanic culture. Finally, new courses were developed in Business Computer Systems, Webmaster Specialist and Business Administration, and E-Commerce Specialization.

> *After 25 years being out of school, I was not sure about coming back, but I saw that I can succeed. The study groups help because students have different interpretations of the material and they are encouraged to ask questions.*
>
> Student Participant in the IT Working Connections Program

A success story. In August 1999 Rodney Garcia was released from prison. Now he is an entrepreneur and a businessman thanks to the opportunities and mentoring afforded by STCC. Before attending STCC Rodney Garcia was not thinking of being an Internet entrepreneur, but his sister encouraged him to participate in STCC's Microsoft IT Working Connections program and it literally changed his life. The program provided him with much needed funds to attend STCC and attentive faculty advisors provided the supportive environment he needed. And Rodney also contributed to the program by serving as a tutor in STCCs Open Computer Lab. In addition to launching his Internet hosting and website development business he also works part time as a computer assistant to a local real estate company. As Rodney states, "It is all about community development, and it should come first. I believe in the community and the community college."

> *It is all about the community… I believe in the community and the community college.*
>
> Rodney Garcia, STCC Student

Summary

In accord with the dictates of the Texas Higher Education Coordinating Board students are expected to be placed in jobs for which they studied for this reason and in keeping with the interests of the community and the community's businesses STCC is very careful to focus it faculty and other educational resources on current and predicted regional workforce needs.

Many of STCC students live in "colonias" yet many of these kids can be found working with state-of-the-art computers and software in STCC's "Open Computer Lab," a converted cafeteria. This "Lab" is open to the community and STCC students until ten every evening and it is commonly full of energized kids learning and acquiring knowledge over the Internet and from each other. And their discussions often include chats and games with "fellow" students in Russia, France, Mexico, and other regions of the world. State-of-the-art math and biology software packages bring STCC science and math subjects alive through real-life graphics and animations and explanations that reinforce lectures, as emphasized

> *STCC students are transforming themselves – they are "leapfrogging" from the colonias to the computer age.*

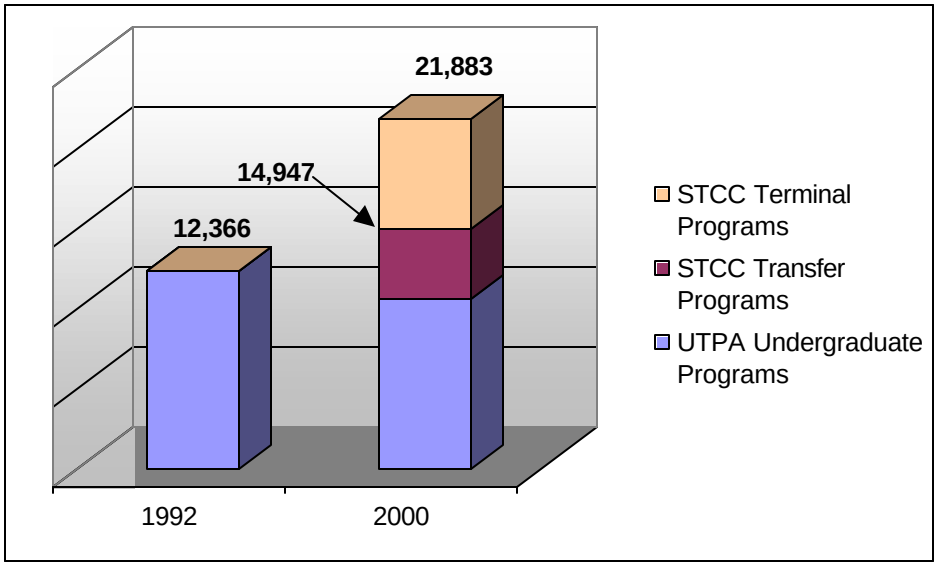
by Mario Reyna, Division Director of Business, Math and Sciences, STCC, "We have done everything possible to get them involved and to get their minds interested in science."

STCC Interns provide key assistance and receive needed experience in several local companies—satisfied local businesses include a furniture discount store, a vitamin store, restaurants that are now on the web with several businesses selling their products nationally and globally, thanks to STCC Student Interns. As Division Director Mario Reyna, noted,

> Where community colleges once focused on training mechanics we now concentrate on computer and network training – we are transforming how the community's firms do business and we are also providing the talent.

South Texas Community College is a great success story in that it has eased the entrance into post-secondary education for many students by making it more accessible financially and geographically. Figure 34 shows how enrollment in post secondary, undergraduate programs in Hidalgo County has changed between 1992, the year before STCC opened and the University of Texas – Pan American (UTPA) was the only opportunity available, and the year 2000.

Figure 34: Post-Secondary Enrollments in Hidalgo County, 1992 & 2000



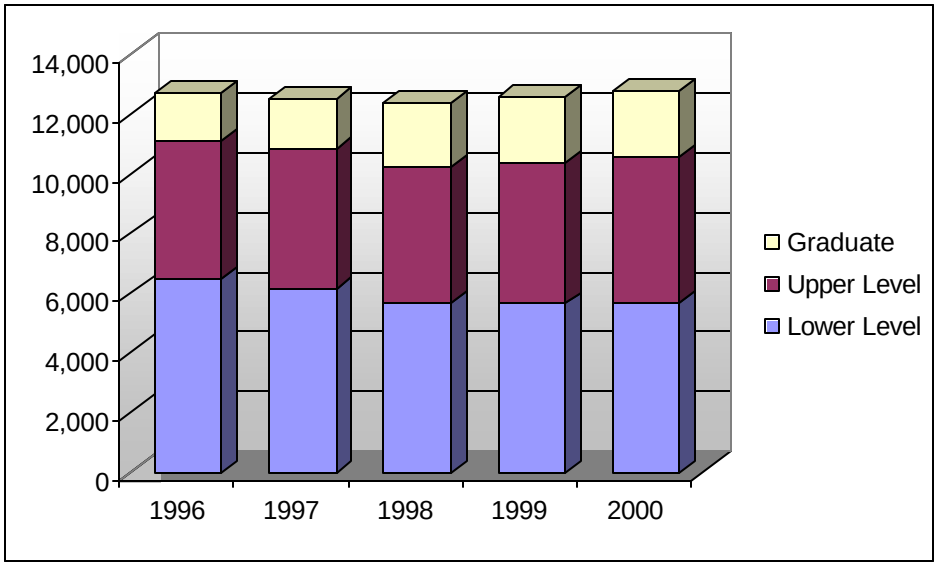
Sources: 2001 South Texas Community College Fact Book, McAllen, TX and 2000 UTPA Fact Book, Edinburg, TX

Between UTPA and STCC, the enrollment in programs leading eventually to a bachelor's degree has increased by 2,581 since 1992. This is an increase of just under 21% in a nine year period—an annual rate of only 2.4%. This is during a period when the number of high school graduates in the county grew at an annual rate of 3.9%. What is true, however, is that total enrollment in undergraduate and other post-secondary programs has increased at an annual rate of 7.4% since 1992. The conclusion is that even though STCC has not enrolled as many students in two-year transfer programs as it might have, it has certainly created a strong growth in other types of post-secondary programs.

University Education

The University of Texas – Pan American, located in Edinburg, is the largest university in South Texas with a full time enrollment of 12,760 in the fall of 2000. This number included 2,196 graduate and post baccalaureate students. Programs of the university are offered in six colleges: Arts and Humanities, Social and Behavioral Sciences, Health and Human Services, Education, Business Administration, and Science and Engineering.
With the growth of STCC, the university's enrollment has seen a shift, with fewer lower level students and more upper level and graduate students.

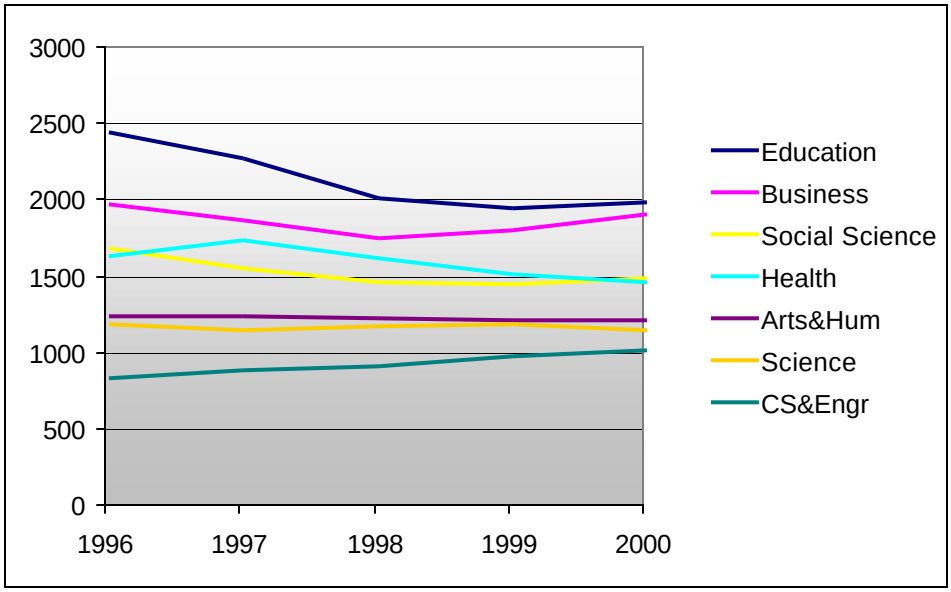
Figure 35: UTPA Enrollment, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

Undergraduate Programs
The university offers 49 undergraduate degrees, and in recent years (1996-2000) there have been significant shifts in terms of the majors being pursued by UTPA undergraduates. The number of majors in computer science and engineering has increased by 22.0% and the number of majors in science has slightly decreased (2.8%) despite the fact that the number of undergraduate majors has decreased by 7.1% over that period of time (a reflection of the STCC impact). The biggest declines have been in education and the social sciences (18.8% and 12.4%, respectively) (Figure 36).

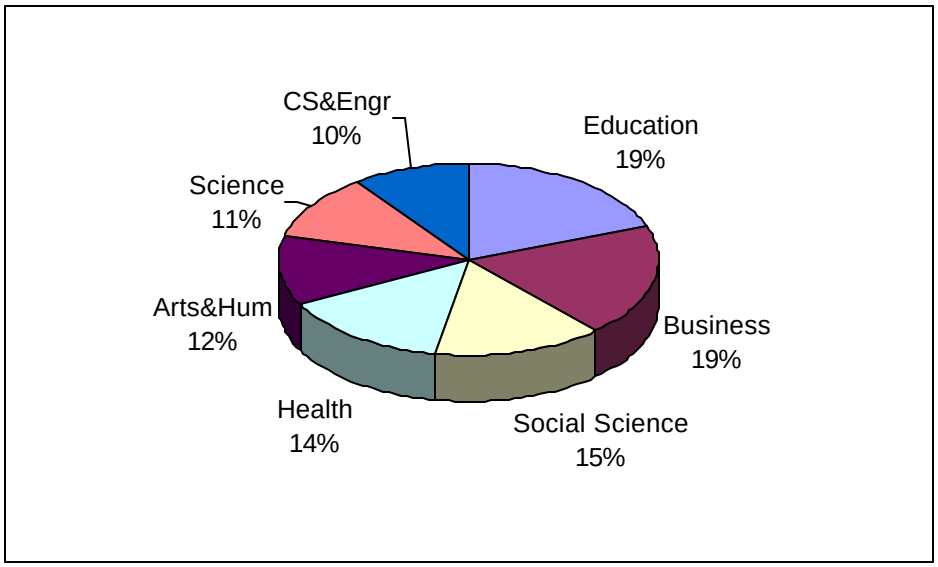
Figure 36: UTPA Undergraduate Majors, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

The university now has slightly over 21% of its undergraduate majors in Science, Computer Science, or Engineering (Figure 37)

Figure 37: Distribution of UTPA Undergraduate Majors, 2001

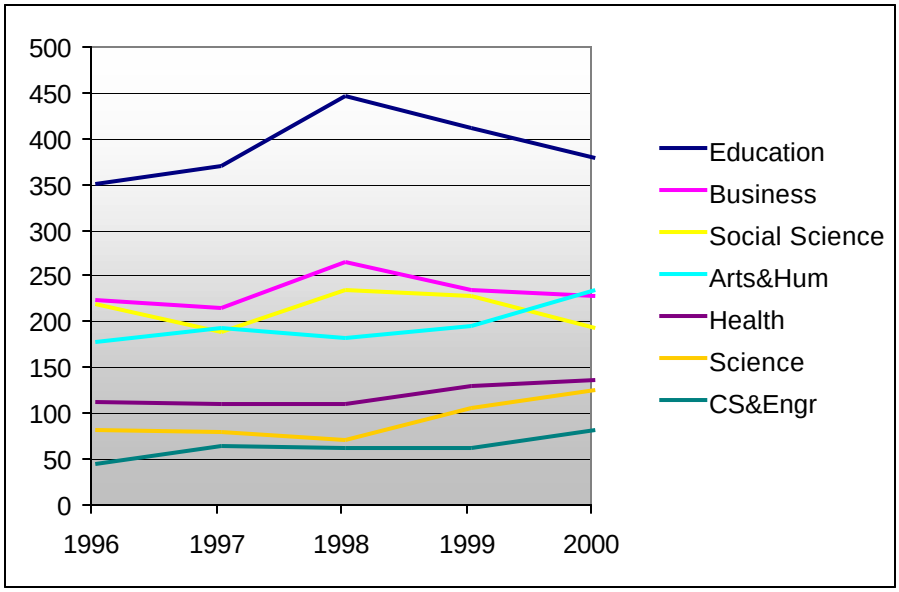


Source: 2000 UTPA Fact Book, Edinburg, TX

Despite the decline in undergraduate enrollment, the number of graduates has increased between 1996 and 2000 by 14.3%, with 1,340 students graduating in 1999-2000. All but the social and behavioral sciences have seen an increase in graduates over the five year period (Figures 38 and 39). An on-going challenge for the university is the retention of students from first enrollment to graduation. UTPA has one of the lowest graduation rates in the state of Texas, with only 18.4% of students graduating within six years. It is anticipated that the increased quality of the entering

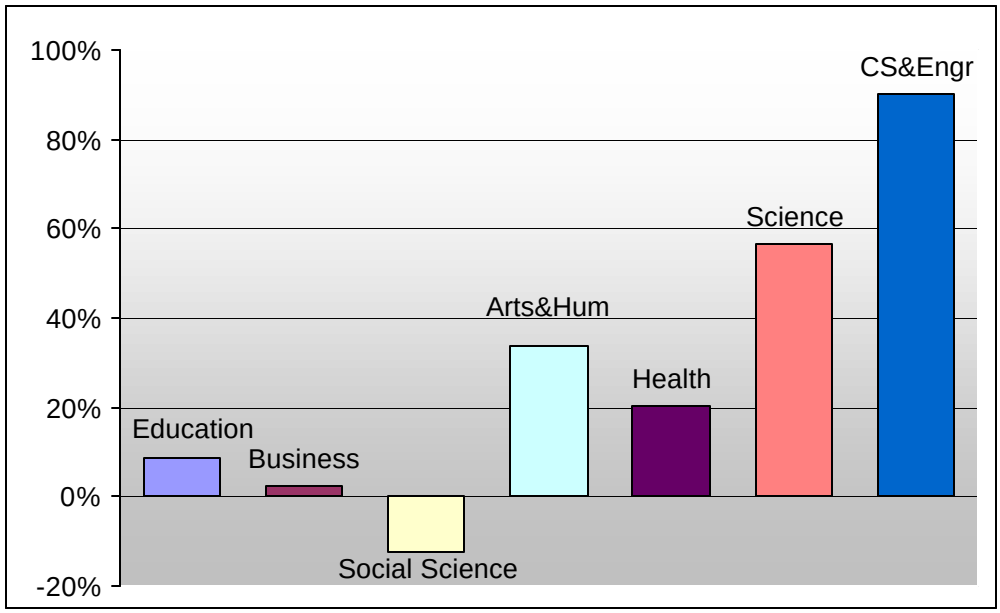
freshmen classes, due to a more stringent admissions policy and the siphoning off of the less well-prepared students to the community college, together with concerted efforts at retention within the university will have a positive impact on graduation rates in the upcoming years.

Figure 38: UTPA Undergraduate Degrees, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

Figure 39: Change in UTPA Undergraduate Degrees, by Discipline, 1996-2000

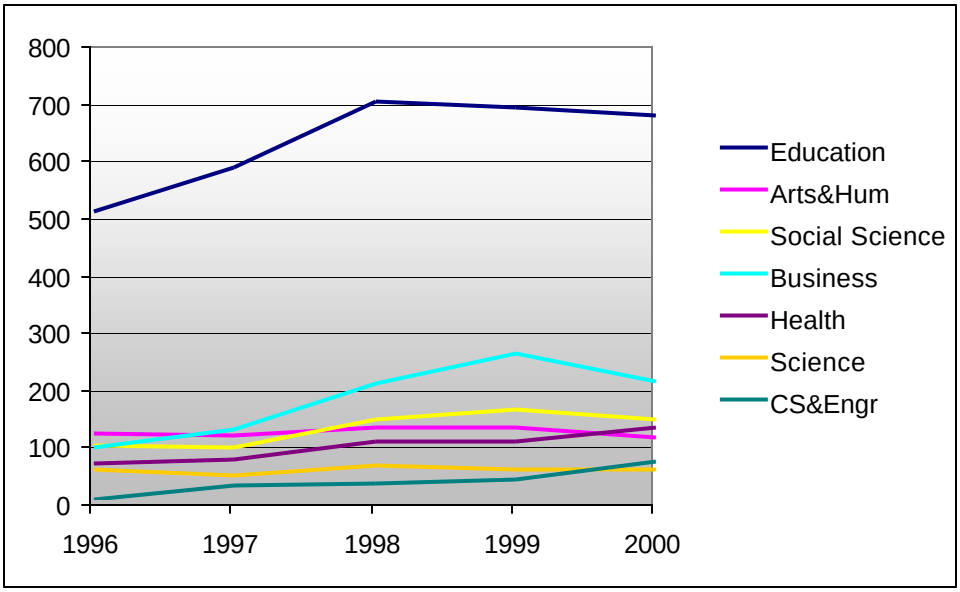


Source: 2000 UTPA Fact Book, Edinburg, TX

Graduate Education

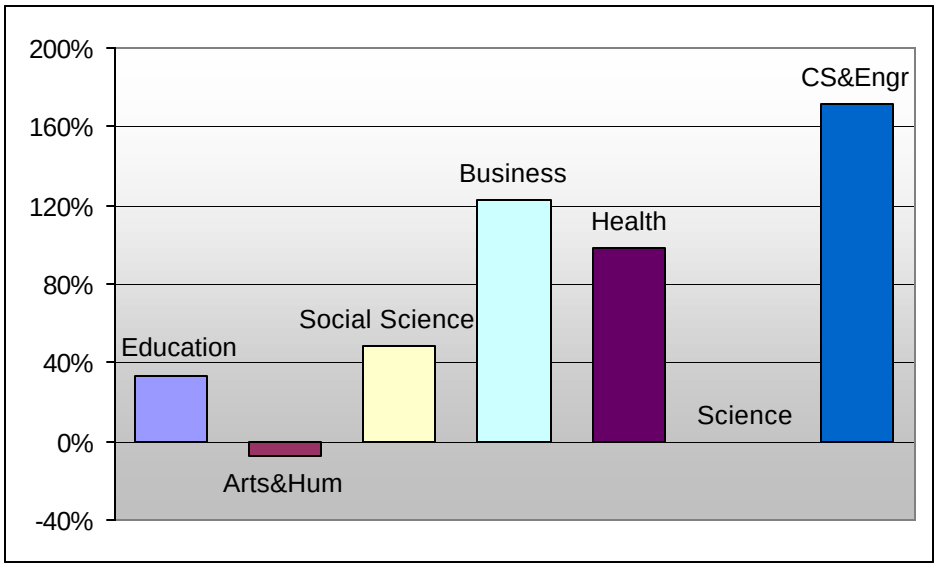
UTPA offers 39 master's degrees and two doctoral degrees (International Business and Educational Administration and Supervision). Graduate enrollment has increased 31.1% in the last five years. While dominated by programs in education, there have been significant increases in business, health, computer science, and engineering (Figures 40 and 41).

Figure 40: UTPA Master's Enrollment, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

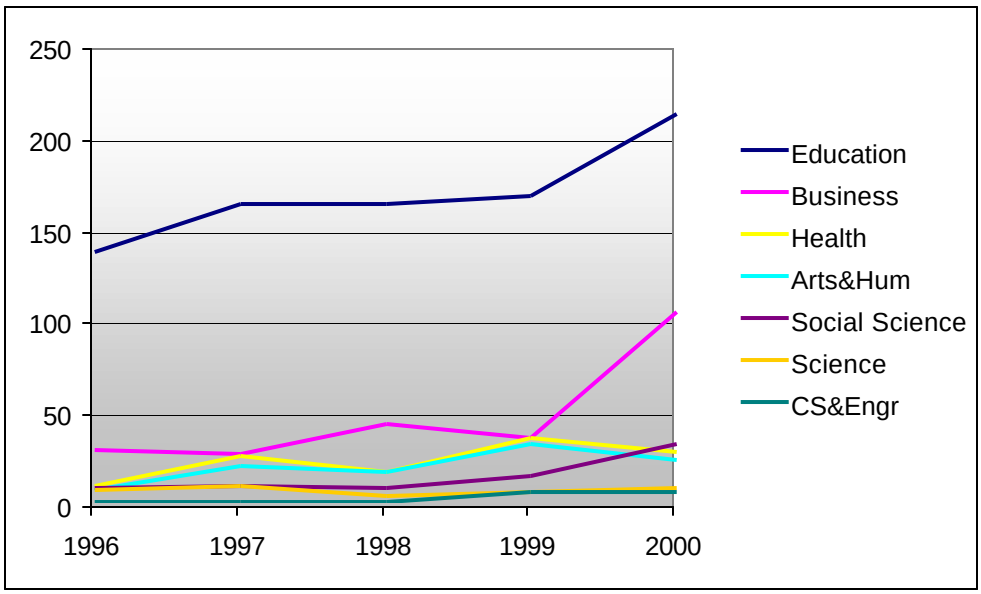
Figure 41: Change in UTPA Master's Enrollment, by Discipline, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

The university graduated 412 master's degree students in 1999-2000, an increase of 111.3% since 1996. All disciplines increased their numbers over the five year period, with education and business showing particularly large gains (Figure 42).

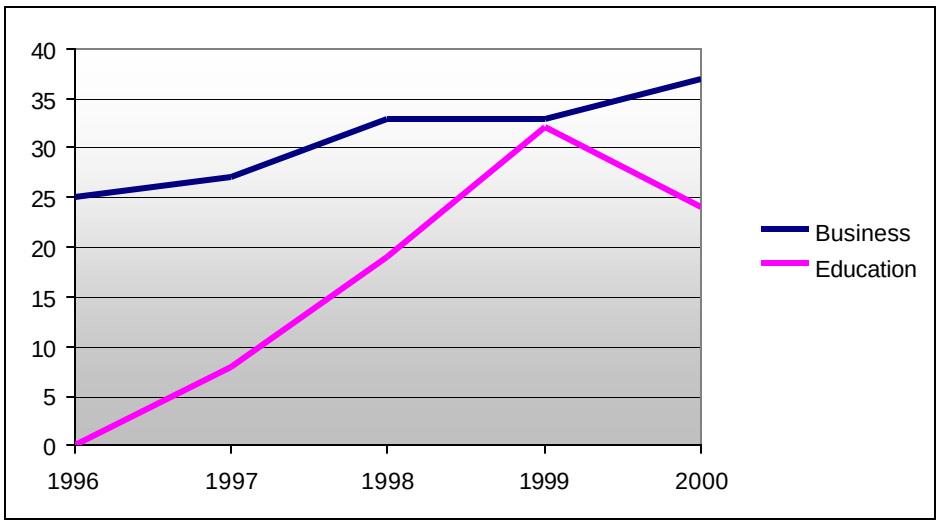
Figure 42: UTPA Master's Degrees, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

UTPA's two doctoral programs are relatively new: International Business enrolled its first students in 1994 and Educational Administration and Supervision enrolled its first students in 1997 (at that time the program was jointly administered with the University of Texas at Austin) (Figure 43).

Figure 43: UTPA Doctoral Enrollment, 1996-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

As of 1999-2000, there have been seven Ph.D.'s awarded in International Business. As of that time, no Ed.D.'s have been awarded by the stand-alone UTPA Program in Educational Administration and Supervision.

Summary

The University of Texas – Pan American is in the midst of a transformation from an institution working to fulfill the dual role of community college and university to an institution that emphasizes professional and graduate programs. In the academic year 2000-01, the university began to articulate objectives related to the the three strategic goals outlined by President Miguel Nevárez in his 2000 Convocation Address:

- Improving student access and success;
- Being a State of Texas leader in teacher preparation and production; and
- Becoming a regional research university.

At this writing, it is not certain what any specific objectives will be, but it is clear that an opportunity to lay out a clear roadmap for the next few decades now exists for the university. This report, focusing as it does on the role of technology in the region's economic future, would recommend that particular attention be paid to instructional programs in the sciences, engineering, and technology, both at the undergraduate and graduate level. This recommendation simply reiterates that of the Texas Higher Education Coordinating Board in its report, *Expanding the Technology Workforce* (THECB Higher Education Planning Report, April 2000):

> The Coordinating Board and the Legislature should require Texas public colleges and universities to develop and implement plans that will **double the number of engineering, computer science, math, and physical science degrees awarded by 2012.**

The work that needs to be done within the university and the public schools to achieve this goal would have a dramatic effect on the quality of education in the region and would improve the technological workforce substantially. To reach such a goal, many more high school students will have to be better educated in science, mathematics, and technology so as to increase the pool of potential university graduates five to ten years down the road. The rising level of science/technology skill in high school graduates would spill over into the workforce in much larger numbers than those ultimately finishing technical baccalaureate and graduate degrees.

The university has excellent faculty, students, and facilities in science, engineering, and technology and needs to parlay those into substantially larger programs. Graduate programs in a few critical science/technical fields need to be developed at the doctoral level. This report recommends the development of programs with the potential for "technology transfer" and maximal impact on the regional economy. What those might be needs to be determined by assessing the current research programs on the campus and judging which ones are more likely to support economic growth in technology and knowledge based enterprises.

Regional Research

Aside from its instructional programs, The University of Texas – Pan American has a growing emphasis on research. President Miguel Nevárez has indicated that one of the three priorities for the institution is to develop UTPA into a regional research university. In the 2000-2001 academic year, each college of the university developed its own set of priorities in contributing to this goal. These priorities are listed below:

College of Arts and Humanities:

- Borderland Arts, Theatre and Music
- Latin American and Mexican American Culture and History
- Intercultural Communication
- Educational Issues and Teacher Preparation in the Humanities

College of Business Administration:

- International Business Policy and Practice
- NAFTA
- Tourism
- Border Economy

College of Education:

- Two-Way/Dual Language Acquistion and Multicultural Education
- Learning Patterns and Process of Bilingual Children
- Teacher Preparation Models
- Student Retention and Success in the Public Schools
- Public School Leadership and School Improvement

College of Health and Human Services:

- Diabetes
- Emergent Infectious Diseases
- Health and Nutrition Factors of the Border
- Substance Abuse and Addiction
- Heart Disease

College of Social and Behavioral Science:

- Borderland Studies
- Crime, Drugs and Criminal Behavior
- Social and Political Attitudes and Behavior
- Social/Health Policy
- Psychological Issues on the Border

College of Science and Engineering:

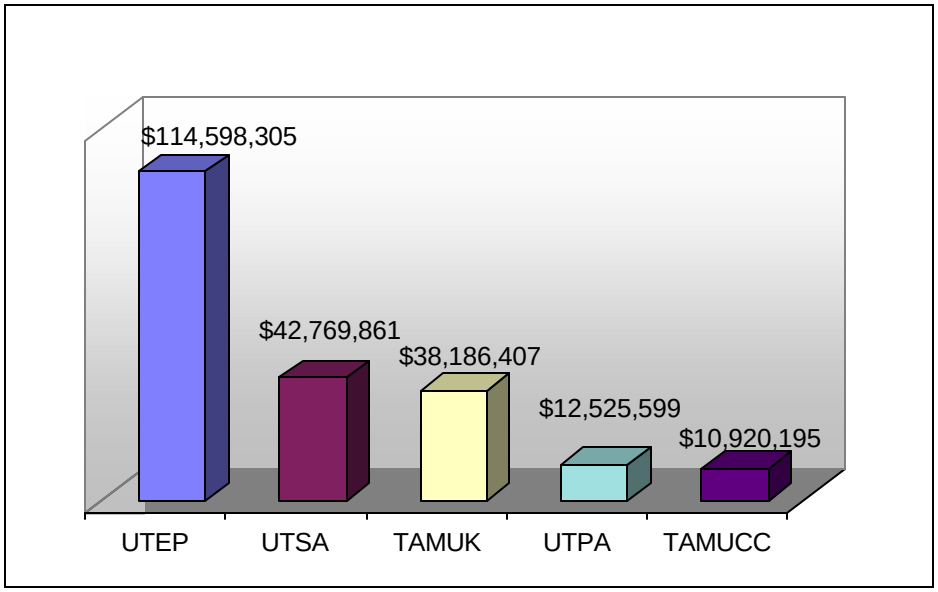
- Biomedical and Bioengineering
- Alternative Energy
- High Energy Physics

- Material Explorations and Development
- Information Technology

R&D Expenditures

One measure of the progress towards reaching research goals is to examine the expenditures on the research and development (R&D) programs in the colleges. Research programs at the UTPA are in their infancy, even in comparison to other Border/South Texas universities(Figure 44)[3], but a beginning has been made and growth has occurred (Figure 45).

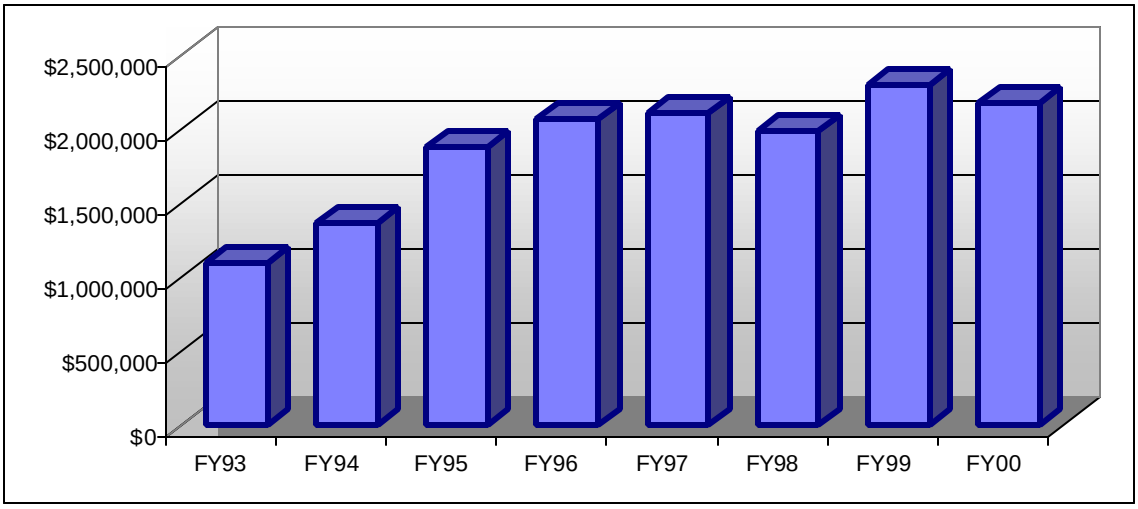
Figure 44: R&D Expenditures at Border/South Texas Universities, 1995-2000



Source: Texas Higher Education Coordinating Board

[3] These institutions are University of Texas at El Paso (UTEP), University of Texas at San Antonio (UTSA), Texas A&M University at Kingsville (TAMUK), and Texas A&M University at Corpus Christi (TAMUCC)

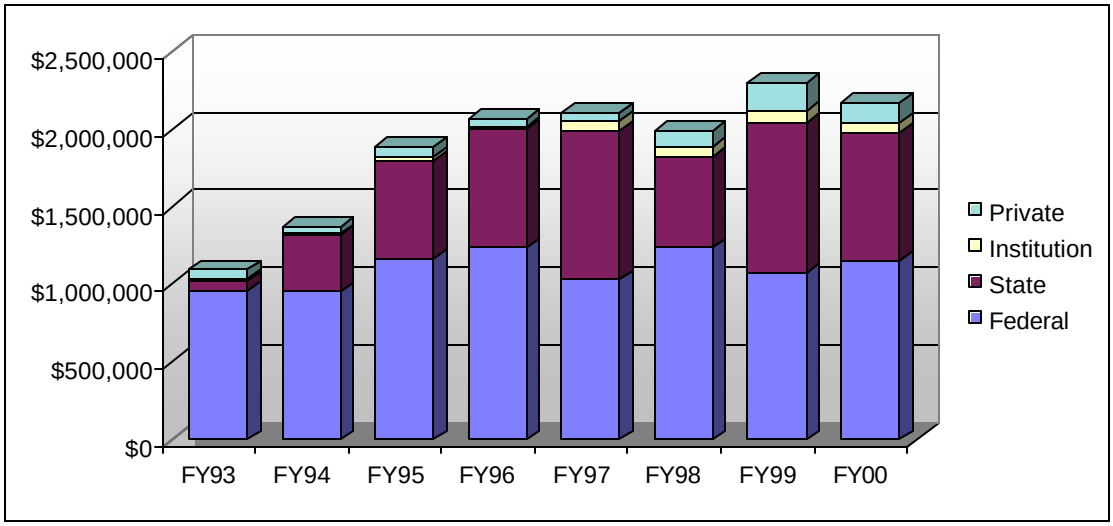
Figure 45: Total UTPA R&D Expenditures, 1993-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

Most of the increase in this period of time has been due to increased state and private R&D funds as the percentage of funds coming from the federal government has decreased significantly (Figure 46).

Figure 46: Sources of UTPA R&D, 1993-2000



Source: 2000 UTPA Fact Book, Edinburg, TX

It is clear that efforts must be made to markedly increase federal support for the research programs of the campus, since the federal government is by far the "deepest pocket" available. **Reaching the university's research goals cannot be supported with the current amount of funds and the current ratios of funding sources.**

In the last five years the two fields of research that have seen the largest expenditures on campus are the **medical sciences** and **engineering**, accounting for 49.8% of the total between them (Table 7).

Table 8: Detail of UTPA R&D Expenditures, 1996-2000

		FY96	FY97	FY98	FY99	FY00	TOTAL
SOURCE	Federal	$1,235,793	$1,029,730	$1,234,879	$1,077,255	$1,149,325	$5,726,982
	State	772,554	957,095	593,789	966,569	831,282	4,121,289
	Institution	6,211	66,893	54,598	79,478	63,746	270,926
	Private	56,854	56,856	103,336	173,321	131,209	521,576
FIELD	Engineering	293,176	349,728	586,669	375,855	434,159	2,039,587
	Physical Sciences	247,876	201,984	93,360	192,706	166,783	902,709
	Environmental Sciences	75,066	52,336	108,297	80,779	24,701	341,179
	Mathematical Sciences	35,095	3,760	0	0	3,371	42,226
	Computer Science	23,849	37,125	68,119	89,460	6,408	224,961
	Medical Sciences	658,879	582,843	645,078	682,779	692,876	3,262,455
	Agricultural Sciences	23,763	13,761	4,147	0	10,349	52,020
	Biological and Other Life Sciences	122,111	83,927	50,495	107,378	242,953	606,864
	Psychology	9,652	0	0	3,607	53,935	67,194
	Social Sciences	93,257	54,597	108,070	216,614	95,857	568,395
	Arts and Humanities	1,815	2,031	545	50,180	19,632	74,203
	Business Administration	205,586	512,467	267,085	325,459	333,011	1,643,608
	Education	272,158	212,927	49,362	169,102	86,660	790,209
	Law and Public Administration	9,129	3,088	5,375	2,704	4,867	25,163
	TOTAL	$2,071,412	$2,110,574	$1,986,602	$2,296,623	$2,175,562	$10,640,773

Source: 2000 UTPA Fact Book, Edinburg, TX

Table 8 lists the largest R&D grants or contracts awarded to select faculty in the past three years.

Table 9: UTPA's Largest R&D Grants/Contracts, 1999-2001

Mohammed Farooqui (Biology) MBRS Program - Continuation National Institutes of Health	$802,503
Mohammed Farooqui (Biology) MBRS Competing Continuation National Institute of Health	$640,638
Anxiu Kuang (Biology) The Effect of Microgravity on Seed Development and Maturation NASA	$88,433
Frank W. Judd (Biology) Evaluation of Rio Grande Wildlife Corridor Revegetaion Efforts THECB ARP	$73,213
Luis A. Materon (Biology) Role of Production practices on microbial contamination of cabbage and cantaloupes THECB ATP	$63,000
Jacob Chen (Engineering) Rapid Product Development in International Production National Science Foundation	$320,814
Arnold Lumsdaine (Engineering) Optimal Design of Hybrid Passive Viscoelastic and Active Piezoelectric Damping Layer NASA	$305,615
Karen Lozano (Engineering) Acquisition of Instrumentation for Nanoreinforced Polymer Composite & Research National Science Foundation/MRI Program	$195,000
Jacob Chen (Engineering) A Fuzzy-based Human Reliability Analysis System for Web-based ACLS Training & Performance THECB ARP	$76,138
Ala Qubbaj (Engineering) Control of Pullutant Emission in Natural Gas Diffusion Flame by Using Cascade Burners Department of Energy/Federal Energy Technology Ctr	$64,998
Richard Fowler (Computer Science) Control Architecture for Robotic Vehicles-Jet Propulsion Lab NASA	$99,300
Akhtar H. Mahmood (Physics & Geology) A Search for Heavy Flavored Baryons and their Decays THECB ARP	$54,000

Source: UTPA's Office of Sponsored Projects

Aside from strictly R&D contracts, the academic colleges have also been increasingly successful in obtaining other external funds to support their instructional and service missions (Table 9).

Table 10: UTPA External Funding, 1999-2001

	FY99	FY00	FY01*	Total
Academic Affairs	$1,575,243	$139,603	$66,917	$1,781,763
Arts & Humanities	$49,980	$39,939		$89,919
Business Administration		$7,250		$7,250
Education	$1,768,586	$29,758,317	$254,500	$31,781,403
Health Sciences	$1,541,098	$2,042,720	$615,805	$4,199,623
Social & Behavorial Sciences	$5,000			$5,000
Science & Engineering	$2,298,536	$10,425,311	$797,033	$13,520,880
Total	$7,238,443	$42,413,140	$1,734,255	$51,385,838

*as of 4/01

Source: UTPA's Office of Sponsored Projects

Two quite significant grants in FY 2000 are the $28.1 million dollar GEAR UP grant to the College of Education for work with middle school students to lay the foundation for college preparation and the $7.0 million donation of an NCR Teradata 5100M computer to the Computer Science Department for database training of information technology professionals.

The RAHC

Another important research resource for the region in the near future will be the Research Division of the Regional Academic Health Center (RAHC) to be located on the UTPA campus. The RAHC is a branch of the University of Texas Health Science Center at San Antonio (UTHSCSA). A joint RAHC Research Committee from UTHSCSA and UT – Pan American was appointed during fiscal year 2000, and in joint meeting between UTPA and UTHSCSA scientists progress was made in identifying research areas that can be addressed collaboratively by scientists at the two facilities. General areas of research that were identified included **diabetes**, **emerging infections**, and **environmental health**. There was agreement regarding the need for research core support in **epidemiology/biometrics** and **laboratory animal resources**. Collaborative work will continue toward the development of the research program document and to provide more specificity to the identified general research areas and essential core support for these activities.

Summary

The beginning that has been made, along with the establishment of the RAHC's research operation, offers much promise for strong research resources being developed at the UTPA campus. Major challenges face the university in building significant research efforts and accompanying graduate programs, however. Reiterating what was noted in the discussion of graduate education, it is the view of this report that research programs in science, engineering, and computer science must be nurtured and every effort must be made to bring research dollars, particularly federal research dollars, to the campus.

Education Infrastructure Summary
Dramatically improving the educational level of its population is the single most important task facing Hidalgo County. The urgency of this task is reflected in the opinions expressed in the survey of business leaders and is demonstrated by the sheer pressure of demographics.

The challenges facing the **public schools** in Hidalgo County are clear and serious: more young people must finish high school and more young people must finish high school prepared for post-secondary education, whether that be in the university, community college, or direct workforce training programs. Having a 33% attrition rate from eighth grade to the senior year of high school is simply not acceptable; having students reach criterion on college admission tests at a rate one-third that of the state is not acceptable either. With 40% of the population under the age of twenty, and 20% under the age of ten, public education is first and essential priority for the region—for if we fail to address its problems, all other priorities become meaningless.

The emergence of the **community college** (South Texas Communty College—STCC) is the most significant change in the education landscape of Hidalgo County in the last decade. Since STCC opened, there has been a 76.9% increase in the enrollment in post-secondary programs in Hidalgo County—all of the net increase has been due to growth at STCC, and 72.9% of that increase is due to enrollment in programs at STCC that are directed towards the immediate job market, rather than transfer to a four-year university. The community college is an important resource, particularly in its ability to deliver programs directed at immediate workforce needs. If the technical, knowledge based economy is to grow in the region, then STCC will play a major role in building a component of the skilled workforce needed.

Without a **university** that has strong graduate and undergraduate programs in the SMET (science, mathematics, engineering, and technology) disciplines, a region has no real hope of supporting a knowledge based economy. The University of Texas – Pan American (UTPA) has seen the number of graduates in SMET programs increase by 68% since 1996 (and 90% in computer science and engineering). In spite of that growth, the numbers in absolute terms are quite small—in 2000, there were 119 graduates in the sciences and only 76 in either computer science or engineering. A single, significant, technical employer (3,000 employees) would need 750 undergraduate engineers or computer science graduates, and a steady stream of 200 such people finishing each year. It is clear that UTPA falls far short of meeting just one such employer's needs. The statewide goal of doubling the number of SMET graduates by 2012 must become the absolute minimum goal for the university.

At the graduate level in the sciences and engineering, UTPA has small master's degree programs, with strong growth (172% since 1997) in computer science and engineering. This small base is an important one to build on, but substantial, absolute increases in the number of graduates must take place if the regional economy is to feel any impact on its supply of highly skilled potential employees. There are no doctoral programs in the SMET disciplines currently, though Ph.D's Biology and Computer Science have been included in the 2000 revision of the university's table of programs—the first step in developing and gaining approval for new degrees in the University of Texas System. Ultimately, doctoral programs have more significance as sources of research and development and technology transfer rather than sources

of supply for the local workforce. This is because of the close relationship between significant research programs and doctoral level instruction in SMET disciplines. It is the view of this report that the university must vigorously pursue the development of the two doctoral programs and support the development of the research programs around which these instructional programs will be based.

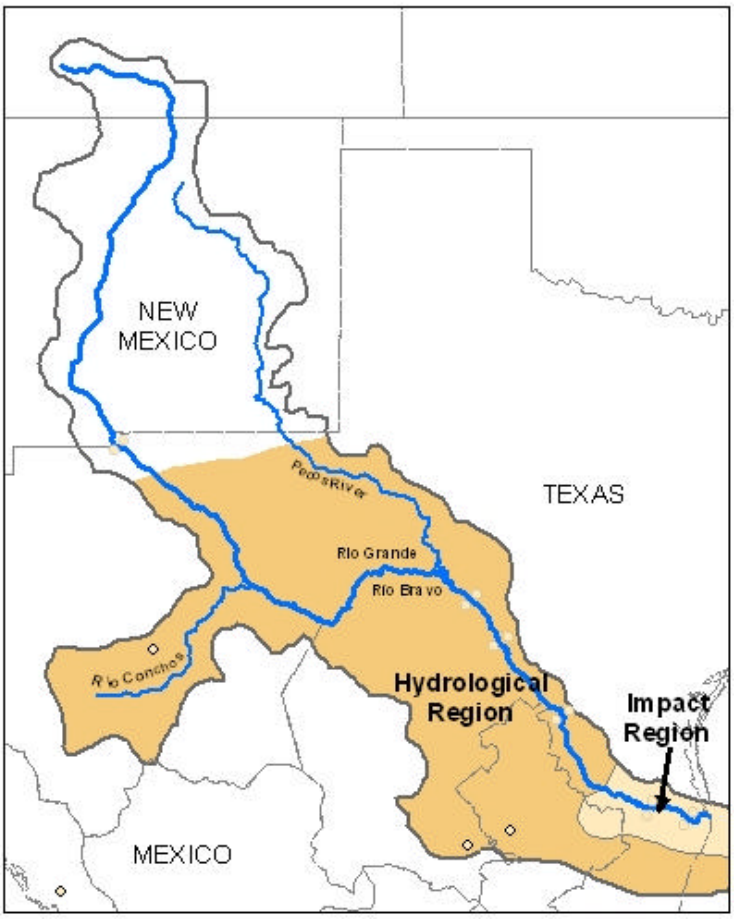
In most examples of the technopolis (Silicon Valley, Austin, etc.), university **research** programs have played a significant role in growing and sustaining the knowledge based economy. These programs are a research and development resource for the local community and an engine for technology transfer by bringing ideas from the laboratory to the marketplace. UTPA has small research programs currently—about $2 million per year in R&D expenditures, which is about one-third that of UT-San Antonio and one-tenth that of UT-El Paso. To have an impact on the region, the university must identify some very specific areas of research expertise and vigorously pursue excellence in these. Such identification has begun, with each college setting its research agenda. It is important that doctoral level programs be developed in conjunction with at least some of these research priorities. With the Regional Academic Health Center (RAHC) Research Division being located on the UTPA campus, there will be opportunities to leverage the assets of each entity to build significant research activity. None of the goals for graduate education and research will happen without serious planning and significant allocation of resources.

Civil Infrastructure

Water

In the Survey of Hidalgo County Business Leaders, **the second most critical factor identified by the respondents was "an available and affordable water supply."** The findings of a joint research project between the Houston Advanced Research Center (HARC) and the Insituto Tecnológico y de Estudio Superiores de Monterrey (ITESM), entitled *Water and Sustainable Development in the Binational Lower Rio Grande/Río Bravo Basin,* were published in March, 2000. The bulk of the material in this section comes from this project's report. In the HARC project the fundamental question asked was: "Will there be enough water, of acceptable quality, to support future growth in the drought-prone, ecologically-fragile region?"

Figure 47: The Rio Grande/Río Bravo Basin



Water Supply and Use. The answer depends upon understanding where the region's water comes from. The map above (Figure 47) shows the watershed of the Lower Rio Grande from just downstream from El Paso (at Fort Quitman) to the Gulf of Mexico, just east of Brownsville—a distance of about 800 miles. There are two tributaries, the Río Conchos in

Mexico and the Pecos River in Texas/New Mexico, that account for 95% of the available surface water to areas downstream.

The Río Conchos contributes two-thirds of the water, and the Pecos River contributes one-third. Through the Treaty of 1944, the United States gained rights to part of the Río Conchos flow (by exchanging rights to part of the Colorado River flow in Arizona/California). As part of this treaty between the United States and Mexico, an agreement was made to build and manage, cooperatively, two large reservoirs on the Lower Rio Grande. As a result, Falcón Reservoir (early 1950s) and Amistad Reservoir (mid 1960s) were built, and since 1972 these reservoirs have been operated as a single system.

A large portion of Hidalgo County lies in the "Impact Region" defined in the HARC study, and in 2030 it will have 32.7% of the region's 4.9 million population—a population with 2.6 million in Tamaulipas and 2.3 million in Texas. The population of the entire basin, including Monterrey in Nuevo Leon and the two Laredos, is expected to be 11.1 million in 2030, an increase of 118% since 1995.

This population explosion will have dramatic effect on the non-agricultural water demand, the municipal and industrial (M&I) demand, increasing it by 58% by 2030 (Table 10).

Table 11: Projected Municipal & Industrial Water Demand (Mm^3/month)

	1990	2000	2010	2020	2030
Texas—M&I	14.29	19.96	22.89	25.15	29.73
Tamaulipas—M&I	6.57	8.85	11.07	13.11	15.18
Total—M&I	20.88	28.80	33.96	38.26	44.91

Source: Water and Sustainable Development in the Binational Lower Rio Grande/Río Bravo Basin, Houston Area Research Center, March 2000

These estimates are very conservative concerning Mexican development. Quite plausible assumptions about future per capita water use in Mexico increase the 2030 M&I demand to 23 Mm^3/month, an increase of 83%.

The HARC study created four scenarios to analyze future "firm yields" from the reservoir system:

1) *Drought-of-Record:* establishes a "baseline" scenario using the 1945-1960 hydrology (including the drought-of-record years).
2) *Full Conchos Development:* The average inflow into the Río Grande/Bravo from the Río Conchos, a major tributary in Mexico, has been much greater than the amount required by treaty. This scenario is based on the possibility that in the future Mexico will utilize all Conchos water except the Treaty amount.
3) *Superdrought:* Removes a single, isolated anomalous weather event (Tropical Storm Alice) that occurred during drought of record from the 1945-60 hydrological data to create a more likely representation of the "worst possible drought."
4) *Worst Case:* Full Mexican Development and Superdrought Scenarios combined.

It is possible to calculate firm yields under the indicated scenarios (Table 11).

Table 12: Four Scenarios' Firm Yield for the Falcón/Amistad System

	1945-60 Hydrology	Full Conchos Development	Superdrought	Worst Case
Firm Yield	230 Mm^3/month	176 Mm^3/month	200 Mm^3/month	158 Mm^3/month
Irrigation Shortfall (in 2030)	65 Mm^3/month	119 Mm^3/month	95 Mm^3/month	137 Mm^3/month

Source: Water and Sustainable Development in the Binational Lower Rio Grande/Río Bravo Basin, Houston Area Research Center, March 2000

At present, agriculture uses 80 to 85 percent of available surface water (in 1980-94 this was approximately 250 Mm^3/month). Assuming that that use stays constant and that the M&I demands (in 2030) of 45 Mm^3/month would take precedence over agricultural ones, the four scenarios leave agriculture with 185, 131, 155 and 113 Mm^3/month, respectively**. In the worst case scenario, this would mean a 55% irrigation shortfall.**

Agriculture and Water. Historically, irrigated agriculture played an important role in the development of the Lower Rio Grande Valley and Hidalgo County. Yet, as we have seen, the agricultural services and farming share of the economy in Hidalgo County has declined to just under 5%. According to the U.S. Census of Agriculture, there was a 44% decline in irrigated land in the region between 1982 and 1992, a trend that has continued over the last decade. The Texas Water Development Board estimates that irrigation demand will decline by 10% between 2000 and 2030. It is the conclusion of the HARC report that even larger reductions in agricultural use are likely both in Mexico and the United States.

Field analyses conducted as part of the HARC study show that the agricultural sector in Texas, in some cases, can compensate for reductions in water by crop selection, better technology, and reduction in water losses. For example, one irrigation district used 40% less water due to irrigation improvement, without economic loss. In the HARC study, modeling of the agricultural response to 20% and 40% reductions of irrigation water showed that adoption of more efficient irrigation technologies and changed cropping patterns could deal with the reductions with minimal overall impact on the Lower Rio Grande Valley economy.

It is possible that the negative impact of all but the worst case water supply scenario on the agriculture industry could be minimized by the expected decrease in agriculture and the implementation of the strategies revealed by the HARC simulation studies. It is not clear that the economic incentives exist for employing modified crop patterns or more efficient irrigation technologies, however.

Water Quality and the Ecosystem. According to the HARC study, while the basin exhibits generally acceptable water quality, relative to current standards, there is cause for some specific concerns. The *1994 Assessment of Water Quality in the Rio Grande Basin* prepared by the Texas Natural Resource Conservation Commission indicates concern with two water quality factors in the Lower Rio Grande Basin—salinity and fecal coliform (presence of disease-causing organisms)—and no concerns with toxic substances. Also, demands from agriculture and increased municipal and industrial use have led to new and widespread possibilities for

contamination. Maintaining even the current levels of quality is a continuing challenge since the reduction of flow makes it more difficult for the river to deal with waste and for the river to impede increased salinity created by the intrusion of the Gulf of Mexico at the mouth of the river.

Intertwined with the water quality issue is the issue of the riverine ecosystem—a system that is already damaged and is threatened further with each passing year of diminished flow. Stream flow requirements for a healthy ecosystem are not met today and will probably decline further. **In the absence of improved water management and the establishment of minimum stream flows, it is extremely unlikely, even under the best of scenarios, that the integrity of the ecosystem can be enhanced.**

Water Management. It is clear that the basin is already under water stress and that no significant sources for increased quantities of surface water exist. Unfortunately, there does not exist the institutional capacity to deal with water as a shared resource between Mexico and the United States. The International Boundary and Water Commission (IBWC) manages the water supply, but different water laws and institutions in Mexico and the United States make cooperation difficult for issues (water quality, water planning, ecological protection, etc.) that do not fall under the authority of the IBWC.

Conclusions. "**Whether the basin moves toward a more sustainable future concerning its water resources is largely a question of management"** (the HARC study). Among the conclusions of the HARC study are:

- Urbanization, market forces, and technological improvements will reduce agricultural water needs.
- Seawater and groundwater, though expensive to process, are abundant in the area and will be of value for meeting future water needs.
- Water management must be improved—international institutions must be created to manage water demand, groundwater, and the water needs of the ecosystem.
- A binational drought management plan, including a study of drought impacts and remediations, must be developed—the current (2001) situtation involving the Mexican water debt may not have arisen if such a plan were in place.
- Cities need to upgrade their distribution systems to reduce waste and leakage, and need to invest in waste water treatment.
- Farmers and irrigation districts need to have access to low-cost investment funds to modernize their irrigation systems.

Transportation

The McAllen-Edinburg-Mission MSA currently has adequate access to highways, rail, air, and bus service. Shipping is available through the Port of Brownsville. It is the future that is of concern:

- Lack of an interstate highway linking the region to the rest of the country will be a great detriment to economic development.
- The congestion at the international bridges must be dealt with.
- Traffic will double by 2020 and the local highway infrastructure must be upgraded to deal with that.

Highways

U.S. Highways 83 and 281 connect McAllen with Interstate Highways 35 and 37 to the North. A four-lane Autopista or super highway connects Reynosa to Monterrey, Mexico, greatly aiding the distribution of goods into Mexico and beyond. In addition, at least one of the proposed I-69 Corridors, which will extend from Mexico City to Detroit and into Canada, will run through McAllen.

Figure 48: Rio Grande Valley Highways

U.S. Highway 77 connects the Valley to the Coastal Bend region. The four-lane highway runs through Willacy County down to Harlingen where it connects with Expressway 83. From there 77/83 runs southeast to Brownsville.

Air

McAllen-Miller International Airport is the regional air transportation center. The Airport's $26 million dollar terminal, inaugurated in September 1993, has frequent daily flights to Dallas, Houston, St. Louis and Austin. Through Continental, American Airlines, and TWA hubs, passengers can continue on to any destination in the world. Boarding's increased 43% from 1990 to 1999. Several air charter services, and aircraft maintenance facility and one fixed base operator are located on the airport property. Seven air cargo companies are based in our Air Cargo Facility offering quick door-to-door shipping and delivery services.

Weslaco and Edinburg both have small airports serving private and coporate aircraft.

Rail

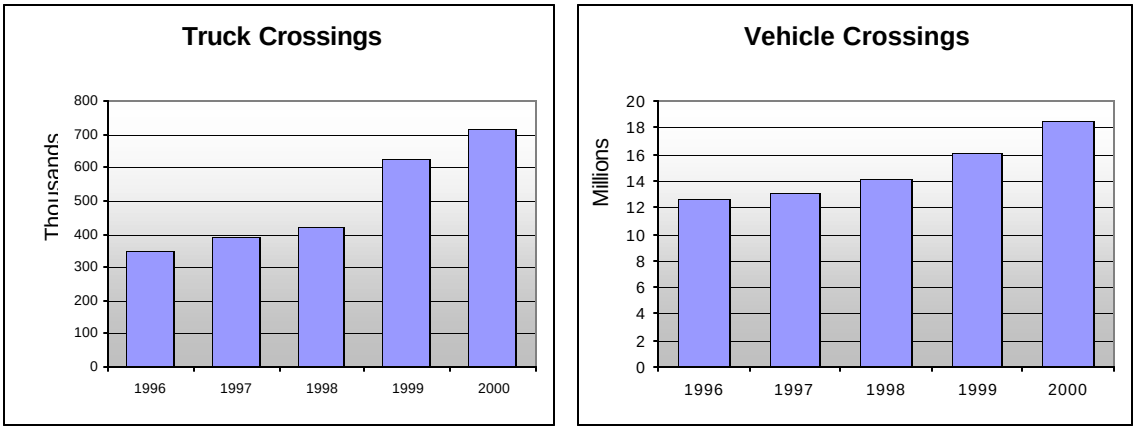
Union Pacific, Southern Pacific and Rio Valley Railways provide access to rail and intermodal service. Rio Grande Valley Switching Co. maintains daily freight service out of Hidalgo County. Rio Valley Switching started operating in March 1993. It has 49 miles of track running between the Borderplex and a branch to the McAllen-Foreign Trade Zone. Rail service in Mexico aboard Ferrocarriles Nacionales de Mexico, the national railway-company, includes a passenger train

serving Matamoros to Reynosa, Mexico and continuing to Monterrey, Mexico. Same-day connections to Mexico City can be easily made in Monterrey.

Bridges

There are three international bridges in Hidalgo County which handle over 18 million vehicle crossings a year, over 700 thousand of which are trucks (Figure 49).

Figure 49: International Bridge Crossings in Hidalgo County, 1996-2000



Source: Data provided by U.S. Customs Service, Inspection & Control Division, Laredo, TX and compiled by Texas A&M International University, Texas Center for Border Economic and Enterprise Development.

McAllen-Hidalgo-Reynosa International Bridge. There are two, four lane wide spans. More than thirty thousand "Southbound" passengers and pedestrians cross the International Bridge every day.

Pharr-Reynosa International Bridge. The Pharr/Reynosa International Bridge is quickly becoming one of the major gateways to Mexico. The Pharr Bridge now handles almost all commercial truck traffic moving north between Harlingen (30 miles east) and Laredo (145 miles west). In one recent month alone, the Pharr Bridge counted 177,219 vehicles crossing, of which trucks comprised 18,435. Part of that fast crossing time has to do with the drive-thru X-ray machine the U.S. Customs Service installed, along with a portable unit, which can process trucks quicker and more conveniently. In addition, the local docking area can handle 50 trucks at a time as the NAFTA gateway continues to expand and fuel the current explosive MSA economy.

Progreso Bridge. The Progreso/Nuevo Progreso International Bridge has been in operation at this location since 1952. During the first years of operation the bridge had relatively low crossings of pedestrians, automobile, and commercial traffic. Beginning in the 70's, an increase in all three categories of crossing was seen. In 1981 Cargill, Inc. constructed an elevator here for the exportation of corn and grain to Mexico. This exportation of agriculture products continued to grow to the point that four elevators are now exporting agriculture products to Mexico (corn, grain sorghum, cotton seed, beans, and popcorn). With the signing of the NAFTA agreement, there has been a substantial increase in commercial traffic in both directions to the point that plans are being finalized for construction of a new replacement bridge, that will adequately serve the pedestrian, automobile, and commercial traffic.

New Anzalduas International Bridge. The most recent of these projects is the Anzalduas International Bridge. This strategic international bridge, 19.3 kilometers in length, will be the shortest passage between the Mexican toll highway and the U.S. transportation arteries, specifically 1-69. Once completed, this connection will be the most efficient route for the distribution of products anywhere along the U.S./Mexico border. The intention of the developers is for the Anzalduas International Bridge to be operational by 2003.

Bus Service

Valley Transit. In 1997, Greyhound Lines and Valley Transit Co. (VTC) merged to form a single operating company. VTC has served the Rio Grande Valley for nearly 70 years. VTC services the Valley cities from its McAllen and Harlingen transit centers. It also provides service to all parts of the U.S. In addition, VTC is a major transit link between McAllen and Reynosa, Mexico. VTC has more than 600,000 passengers into and out of McAllen's downtown each year.

McAllen Express. The City of McAllen began local transit services in June 1997 with the creation of the McAllen Express. The bus has four routes serving 60% of the McAllen population from the McAllen downtown area. A new downtown transit terminal to accommodate the bus and other national and international carriers will be opened in 2000.

Mexican Bus Lines. There are four Mexican-owned bus lines serving the McAllen area. They include Tamaulipas/Noreste Bus Company, Autotransportes CD Mantes, Autobus Turismos Management and ADO Management.

Freight Carriers

Motor Freight. Major motor freight carriers and national contract carriers offer service throughout the U.S., Mexico and Canada. Eighteen common carrier truck lines operate daily schedules carrying both domestic and international goods in and out of the Rio Grande Valley. According to the Texas Department of Transportation statistics, over 2,600 trucks per day carry international goods into and out of the Rio Grande Valley of South Texas.

Air Freight includes Airborne, American, Burlington, Continental Jet Freight, Eagle Freight, Emery, Federal Express, Lone Star Overnight, Northern, and United Parcel Service.

Major Highways and Plans for I-69

There are no Interstate highways that connect the McAllen-Edinburg-Mission MSA to the rest of the United States. Currently, U.S. Highways 83 and 281 connect McAllen with I-35 and I-37 running north and south. The State of Texas has been upgrading the Highway 281 (the connection to San Antonio) to four lanes for the past several years.

In 1999, Congress passed the Transportation Efficiency Act for the 21st Century (TEA-21). This landmark legislation will have profound effects on the nation over the next seven years. Among its provisions are sections dealing with the establishment of Interstate 69, a vital new link connection. A proposed I-69 corridor, extending from Mexico City to Detroit,

will run through McAllen and connect with other Interstate Highways throughout the U.S. and Canada.

NAFTA and Trucking—the Present and the Future
The NAFTA agreement contains the provision that trucking amongst the three nations will be open to all trucks meeting safety and other regulations within each country. The United States has not yet complied with this provision with regards to Mexican trucks, and so currently such trucks are limited to travel within 20 miles of the border. The necessity for off-loading and on-loading at the border has created large trucking and warehousing industries at the important crossing points (Pharr and McAllen in Hidalgo County, for example).

Ultimately, NAFTA will be enforced in this regard and there will undoubtedly be an impact on the industries that have arisen because of the older policies. **A positive future for trucking and warehousing industries in Hidalgo County is not certain**.

Telecommunications Infrastructure
Broadband Access. Unanswered with this report is the question: Does Hidalgo County have the broadband access it needs? Some general answers exist. The major telephone company, Southwestern Bell, provides T1 lines (at premium prices), and DSL service in an ever expanding area. There are several companies providing wireless service on the unregulated frequencies—one of them, RGV Wireless, is featured in a case study in this report (see page xx). The point-of-presence (POP) for virtually all the Rio Grande Valley is in Harlingen, with UT-Pan American using a POP in San Antonio.

Specific details on where the $T1^+$ lines are and who is connected were not available at this time. **It is important that a comprehensive study of the connectivity in the county be conducted**, along with a study of business use of computing and the internet.

Computer Use in the Community. No comprehensive study of business connectivity or of business use of computing or the internet was conducted. However, during Spring 2001, a small connectivity study of Hidalgo County was conducted. The purpose of this study was to determine how businesses within the county were using the Internet compared to other counties, of similar size, within Texas. Based on a random sample of approximately 250 companies, it was determined that only about 5% of companies with operations only in Hidalgo County had Internet websites versus about 50% of regional and national companies that had operations in Hidalgo County

Even though no comprehensive data was developed concerning business use, a survey was conducted of household use of computing and the internet. This phone survey was carried out under the direction of Dr. Robert Wrinkle of the Center for Survey Research at the University of Texas-Pan American.

The survey of 647 residents showed that nearly half (49.5%) of Hidalgo County households have a home computer and more than 75 percent of those home computer owners are connected to the Internet. However, Mexican-American households in Hidalgo County are less likely than Anglo

households to have a computer, 40 percent to 60 percent, respectively. There also are similar ethnic differences in computer use at school and public libraries, but not in the workplace.

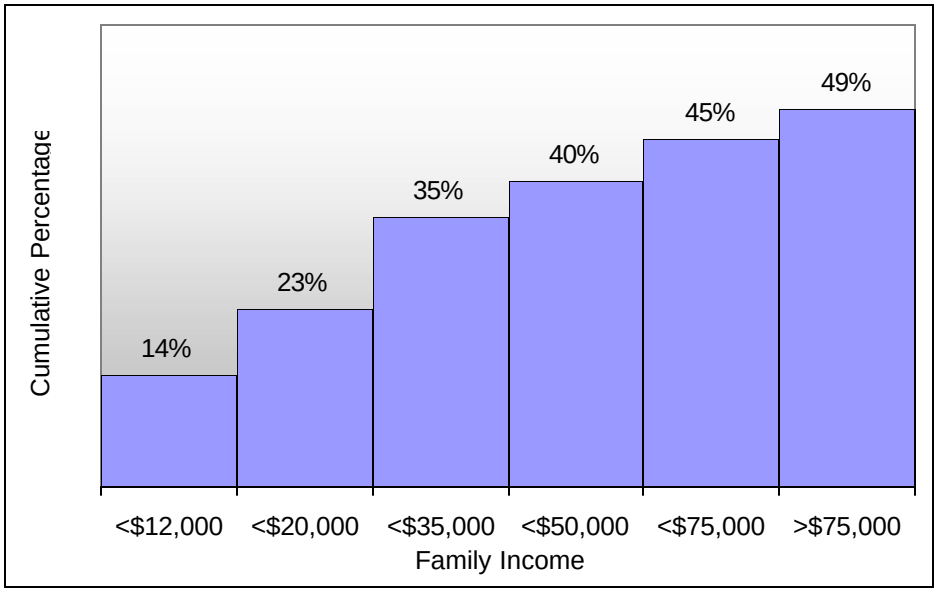
Overall, Hidalgo County computer use mirrors the rest of the country, based on a recent national study. "The Rio Grande Valley seems very representative of the 'wired' national community," said Dr. Robert D. Wrinkle, director of the Center for Survey Research and political science professor. "Some might have expected Valley households to lag further behind the national averages, but instead, they are quite close to national norms."

A majority of Internet use is for e-mail, schoolwork and hobbies. About 47 percent of households use e-mail frequently or daily, compared to nearly 43 percent for research related to school or hobbies.

By comparison, a recent national survey by The Pew Internet and American Life Project found 56 percent of all adults have Internet access, with 16 million new users going online in just the last six months of 2000. Forty-five percent of all children under 18 have access, or more than 30 million.

There are disparities in income and age, though. An estimated 82 percent of households with more than $75,000 annual income now have Internet access, according to the survey, but only 38 percent for households earning less than $30,000. Also, 75 percent of people age 18-29 have access, compared to 15 percent for those 65 and older.

Figure 50: Family Income and Home Computer Use in Hidalgo County



Connectivity in the Schools and Colleges. Through use of federal and state funds, particularly the Texas Infrastructure Fund (TIF), the school districts of the region have become extensively wired. So much so, that **every classroom in every school throughout the Rio Grande Valley**

has at least one connection giving high speed access to the Internet ($T1^+$). This extent of connectivity puts the region well ahead of many urban areas of the state.

UTPA is exceptionally well wired with a fiber optic cable backbone, creating a large capactity "pipe" that serves instructional and administrative needs throughout the campus.

Entrepeneurial Infrastructure

The University of Texas – Pan American through its Office of Center Operations and Community Services (CoSERVE) offers several support services to small business and entrepreneurs.

The Rio Grande Valley One Stop Capital Shop (OSCS) has been in existence since May of 1996. The role of the OSCS is to create, retain and grow businesses and jobs within the federally designated empowerment zone areas. The OSCS provides access to free technical and business assistance as well as access to capital for entrepreneurs and small businesspersons by linking the resources of business and economic development entities. With this in mind, the OSCS has established offices in Port Isabel, Rio Grande City, La Villa, Mercedes and Sebastian.

The OSCS provides various training seminars in the empowerment zone areas. These training sessions range from entrepreneurship to an introduction to Electronic Commerce. The counselors provide one-on-one counseling on the creation of business plans, loan application packaging and other business areas. The counselors are also trained on the Community Investment Fund loan application package of the Rio Grande Valley Empowerment Zone Corporation in addition to other micro lenders in the area such as the Rural Development & Finance Corps.

The OSCS is a partnership with the Rio Grande Valley Empowerment Zone Corporation, the U.S. Small Business Administration, U.S. Department of Housing and Urban Development, Levi Strauss Foundation, and CoSERVE. The OSCS is proud to have been named a recipient of the Vice President's Hammer Award for having "reinvented the process of providing business and technical assistance."

The Small Business Development Center (SBDC) has been in existence since July 1985. The SBDC is a sub-center of The University of Texas- San Antonio Regional SBDC Office. The SBDC's mission is to help build strategically minded and technologically sophisticated small and medium enterprises capable of competing in globally competitive markets. The SBDC is spearheading an initiative to assist businesses that want to utilize the Internet and other Electronic Commerce issues in cooperation with the San Antonio Electronic Commerce Resource Center.

Training on various topics including starting, growing and managing your own business is available. The wide range of topics allows clients to choose the training that they need. The SBDC also works closely with bankers, chambers of commerce and other entities to identify potential clients. Since 1985, the SBDC has counseled over 9,000 clients and assisted in over $70 million in capital formation.

The SBDC is a project of the U.S. Small Business Administration, The State of Texas, and CoSERVE.

South Texas Minority Business Opportunity Committee (MBOC) has been in existence since August 1996. The mission of the South Texas MBOC is to facilitate opportunities for minority entrepreneurs in the areas of procurement and international trade by actively involving its members in efforts that will increase and expand business opportunities and growth. The South Texas MBOC provides a vital link between corporations, government agencies and the minority enterprise while promoting partnerships and economic development among the public and private sector.

The South Texas MBOC assists with linking the minority entrepreneur with minority certification agencies, bid contracting technical assistance centers and potential buyers. Several events are held each year to help accomplish these linkages such as the Procurement Seminars, Maquiladora Trade Shows, MEDWeek activities and Electronic Commerce workshops.

The South Texas MBOC is a project of the Minority Business Development Agency of the U.S. Department of Commerce, Rio Grande Valley Empowerment Zone Corporation and CoSERVE.

The Women's Empowerment Business Center (WEBC) opened its doors for business in October 1998. The WEBC's mission is to assist women entrepreneurs in the Rio Grande Valley by providing quality business and technical assistance focused on their unique economic and societal needs. The center's special focus is on micro and home based businesses.

For new entrepreneurs, training is provided on various topics such as Entrepreneurship, Marketing, Management, Finance, Computer Applications and Funding Alternatives. All counseling and training is available in both Spanish and English. This allows the entrepreneur to feel comfortable with their language of choice. The WEBC also coordinates its financing alternatives with various micro lenders in the Valley such as Accion Texas and the Rural Development & Finance Corp. The Women's Empowerment Business Center (WEBC) is funded by the Office of Women's Business Ownership of the U.S. Small Business Administration, the Rio Grande Valley Empowerment Zone Corporation, CoSERVE, SBC Foundation and the Levi Strauss Foundation.

Four *Veterans' Business Outreach Centers* (VBOC) were funded during the initial Requests for Proposals. Each VBOC provides technical assistance to service-disabled veterans within a region of the U.S. Small Business Administration. The University of Texas-Pan American's VBOC is responsible for Region VI which includes Texas, Arkansas, Louisiana, New Mexico and Oklahoma.

The mission of the Veterans' Business Outreach Center is to help create, retain and develop businesses across Texas, Arkansas, Louisiana, New Mexico and Oklahoma by coupling service-disabled veterans with local SBA sponsored technical and managerial assistance. The center received funding from the U.S. Small Business Administration in late September 1999.

VBOC serves as a clearinghouse of business and technical assistance for veterans within SBA's Region VI. The center networks with SBA district offices and its partners, such as the SBDCs, Women's Business Centers, SCORE, OSCS and BICs across the five-state region to provide training and one-on-one counseling geared towards service-disabled veterans. The VBOC also provides veterans with the ability to receive counseling via e-mail.

The Veterans' Business Outreach Center is a project of the U.S. Small Business Administration's Office of Veterans Affairs and CoSERVE.

The impact of CoSERVE's support is presented in Table 12.

Table 13: CoSERVE Business Development Centers Impact

Year	Clients Served (Training and Counseling)	Capital Formation	Jobs Created/ Retained
1996	843	$ 8,022,200	725
1997	810	$ 9,776,313	282
1998	706	$ 5,013,723	229
1999	1,253	$ 16,688,108	688
2000	2,807	$ 6,968,440	283
2001*	567	$ 2,933,300	208
Totals	6,986	$ 49,402,084	2,415

*Oct - Dec. 2000

Foreign-trade zones are specially designated areas, in or adjacent to a U.S. Customs Port Of Entry, that for the purposes of tariff laws and Customs entry procedures are considered to be outside the Customs Territory of the U.S. In a foreign-trade zone, companies can admit foreign and domestic merchandise for operations such as storage, exhibition, assembly, manufacture and processing, without going through formal Customs entry procedures or paying import duties. When merchandise is removed from a foreign-trade zone, Customs duties may be eliminated if the goods are exported from the U.S. If the merchandise is formally entered into U.S. for commerce, Customs duties and excise taxes are due at the time of transfer from the foreign-trade zone. Companies using foreign-trade zones save money through the deferral, reduction, and elimination of U.S. Customs duties; lower inventory and insurance costs; and distribution savings.

There are four foreign-trade zones in the Rio Grande Valley including: McAllen (FTZ #12), Brownsville (FTZ #62), Starr County (FTZ #95), and Weslaco (FTZ #159). These four zones handled $1.69 billion in merchandise in 1999.

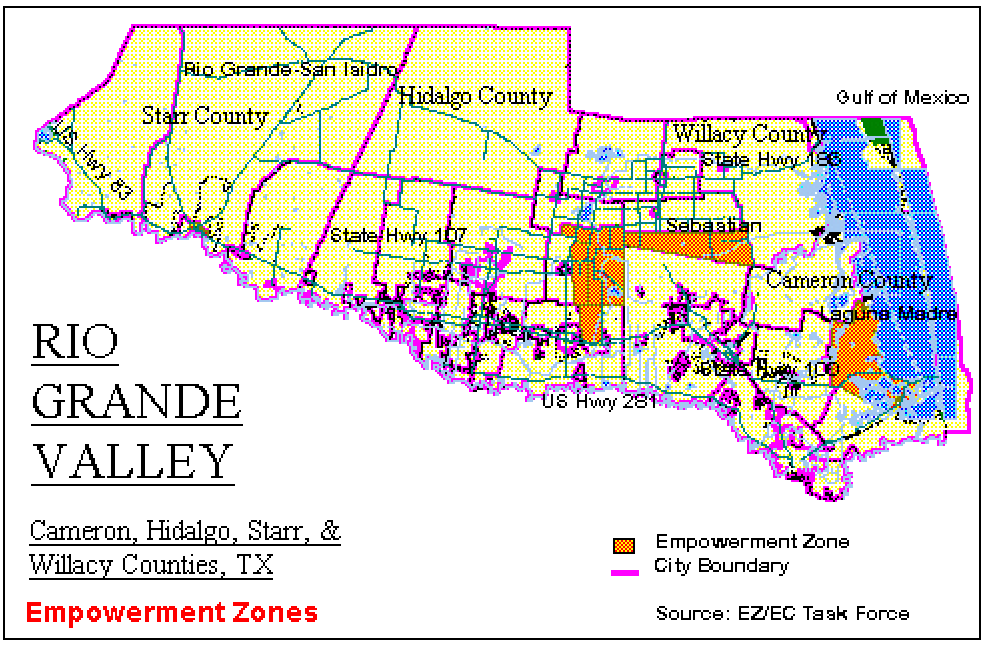
The City of Edinburg has applied for a foreign-trade zone for its airport.

Federal Empowerment Zone. The Rio Grande Valley was designated a rural Empowerment Zone in 1994 and was given $40 million in federal grant funds to develop programs to encourage development in high poverty areas of the Empowerment Zone.

In addition to the federal grant funds, there are a number of tax and financial benefits for businesses in the EZ such as employer tax credits, increased section 179 expensing, enterprise zone facility bonds, and job training assistance.

The RGV EZ encompasses 227 square miles of land including the area of Rio Grande City in Starr County, the Delta Area in Hidalgo County, the Sebastian area in Willacy County, and the Port Isabel area in Cameron County.

Figure 51: The Rio Grande Valley Empowerment Zone



The EZ is administered by the Rio Grande Valley Empowerment Zone Corporation, which is a 501c(3) and has staff that work with residents in the EZ communities.

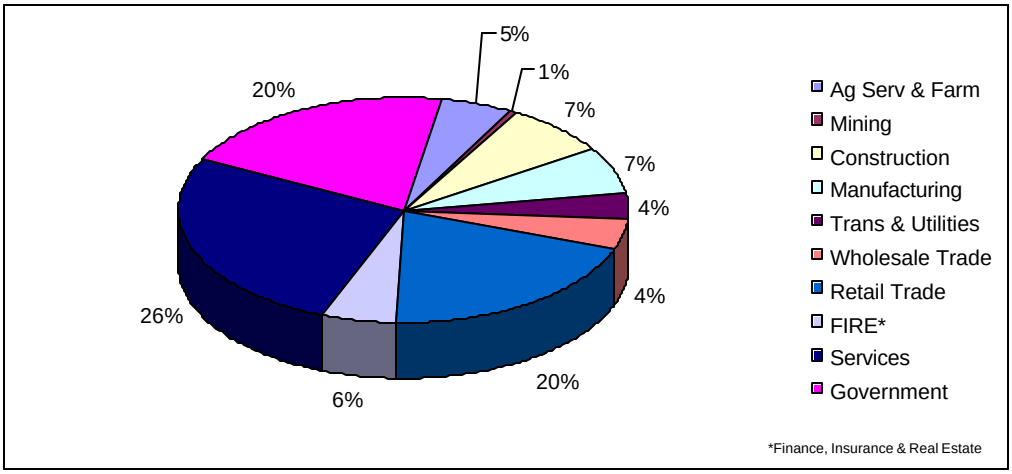
Since its inception the over 40 projects in the EZ have been undertaken to provide job training, improve housing, develop businesses, increase literacy, create jobs, and upgrade infrastructure in the EZ.

Hidalgo County Enterprises

Employment and Income

No longer dominated by agriculture, Hidalgo County's economy is increasingly diverse with the largest sectors of employment being services, government, and retail trade (Figure 52).[4]

Figure 52: Hidalgo County Employment by Sector, 1999



Source: U.S. Department Of Commerce--Economics And Statistics Administration, Bureau Of Economic Analysis--Regional Economic Information System

Employment in Hidalgo County has a slightly different pattern than that of Texas and the United States in that there is significantly more government and retail trade employment and significantly less manufacturing and services sector employment (Table 13).

Table 14: Employment by Industry Sector, 1999

Industry Sector	Hidalgo County	Texas	United States
Agricultural services & farming	4.9%	3.6%	3.2%
Mining	0.8%	1.9%	0.5%
Construction	7.3%	6.5%	5.7%
Manufacturing	6.6%	9.5%	11.8%
Transportation and public utilities	4.1%	5.5%	4.9%
Wholesale trade	4.0%	4.8%	4.6%
Retail trade	19.9%	16.5%	16.4%
Finance, insurance, and real estate (FIRE)	5.5%	8.1%	7.9%
Services	26.4%	29.6%	31.6%
Government and government enterprises	20.4%	14.1%	13.6%

Source: U.S. Department Of Commerce--Economics And Statistics Administration Bureau Of Economic Analysis--Regional Economic Information System

[4] Throughout this section the standard descriptors generated by using *Standard Industry Classification* (SIC) codes will be used. Even though this scheme is in the process of being replaced by the *North American Industry Classification System* (NAICS), which is better suited for the current national economy, this report will use the older SIC scheme, so that comparability can be maintained.

By comparing employment and income by sector, in Hidalgo County, Texas, and the United States we see that services and government enterprises are heavily represented in Hidalgo County, Texas, and across the U.S. (Table 14). Most prominent differences appear in manufacturing which is comparatively low for Hidalgo County and in the retail trade and agricultural services and farming which are comparatively high.

Table 15: Income by Industry Sector, 1999

Industry Sector	Hidalgo County	Texas	United States
Agricultural services & farming	3.9%	1.6%	1.5%
Mining	1.2%	4.5%	0.8%
Construction	6.6%	6.4%	5.8%
Manufacturing	7.4%	13.3%	16.1%
Transportation and public utilities	5.9%	8.9%	6.7%
Wholesale trade	5.4%	7.2%	6.2%
Retail trade	15.4%	9.2%	8.9%
Finance, insurance, and real estate (FIRE)	4.1%	7.6%	9.1%
Services	22.9%	26.7%	28.9%
Government and government enterprises	27.2%	14.5%	15.8%

Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

The patterns in income track that of employment reasonably well, but it is significant that the public sector contributes substantially more, proportionally, to *income* in the county (27%) than it does to *employment* in the county (20%). Within the state of Texas, this is not the case. Another interesting comparison is in the manufacturing sector. In Texas, manufacturing accounts for 13% of the income, while only 9% of the employment; in Hidalgo County, it accounts for 7% of both the income and the employment. This phenomenon is another indication that wages in the county do not measure up to wages in the rest of the state. Using the employment and income figures from the Bureau of Economic Analysis, the following Table 15 compares income per job across the ten sectors.

Table 16: Income per Job in the Sectors of the Economy, 1999

Industry Sector	Hidalgo County	Texas	United States
Agricultural services & farming	$18,642	$15,862	$15,950
Mining	$34,232	$84,440	$60,216
Construction	$21,018	$34,538	$35,571
Manufacturing	$26,058	$49,008	$47,080
Transportation and public utilities	$33,497	$56,825	$47,663
Wholesale trade	$31,065	$52,565	$46,750
Retail trade	$18,069	$19,601	$18,710
Finance, insurance, and real estate (FIRE)	$17,040	$32,864	$39,570
Services	$20,209	$31,594	$31,484
Government and government enterprises	$31,021	$36,129	$40,078

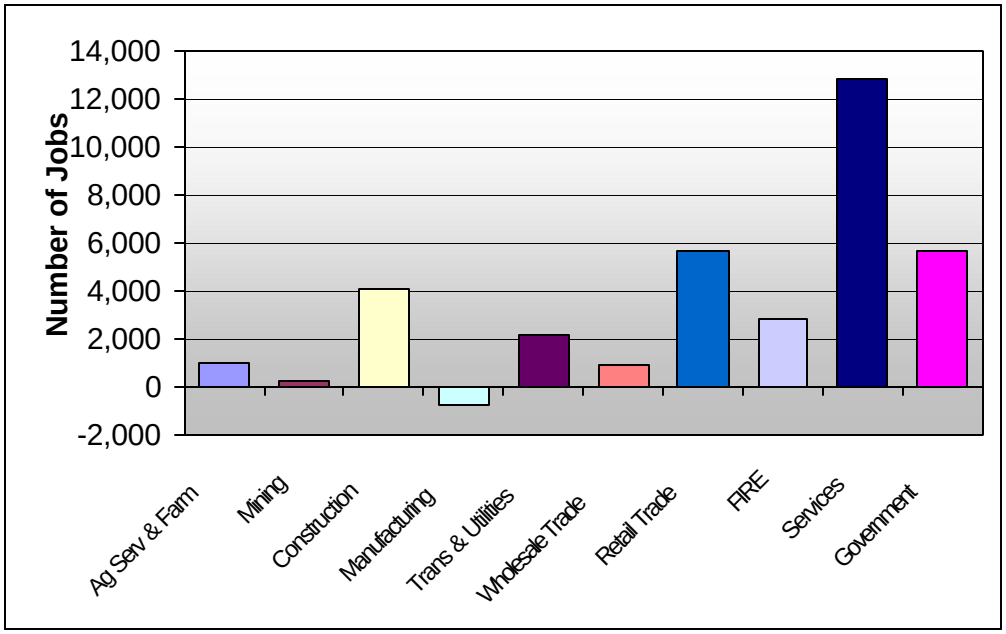
Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

Among the key sectors of employment (excluding agriculture services and farming), it is only retail trade and government that approach state and national levels of income per job. Notably, the manufacturing jobs in the county have an average income per job that is only 53% that of the state**. Therefore, a simple increase in manufacturing jobs without a change in the nature of those jobs and/or a change in the wage pattern would not significantly impact the overall wealth creation of the county in a positive way.**

Changes in Employment and Income

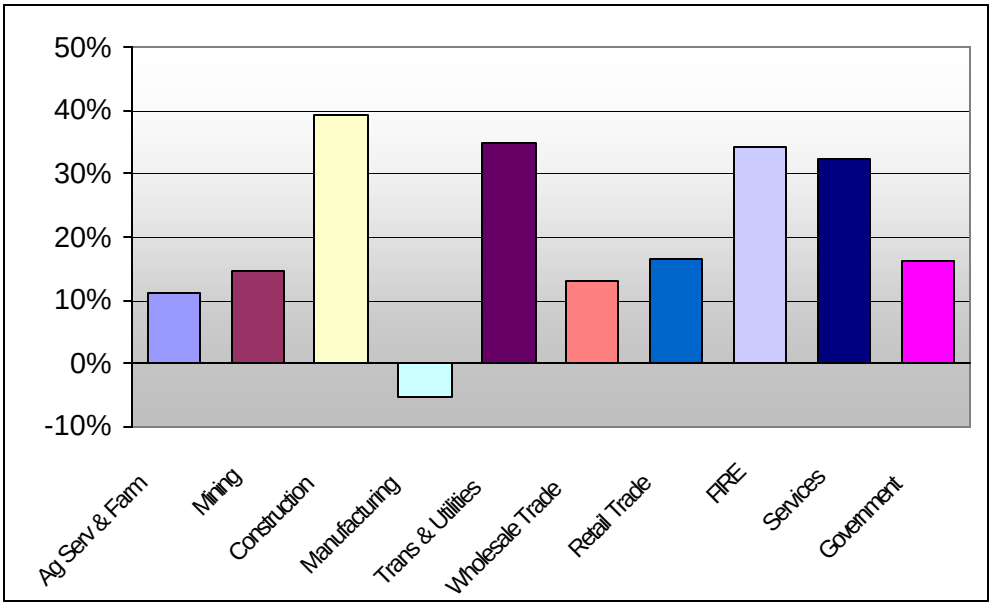
Over the past five years, job growth in Hidalgo County has been dramatic, but as the next two figures indicate it has not been uniform across industry sectors (Figures 53 and 54). By far the most significant employment growth in absolute numbers has been in the services sector. Among the significant employment sectors, the largest percentage growths have been in construction, transportation and utilities, FIRE, and services. **Manufacturing employment actually declined during this time period.**

Figure 53: Hidalgo County Change in Sector Employment, 1995-99



Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

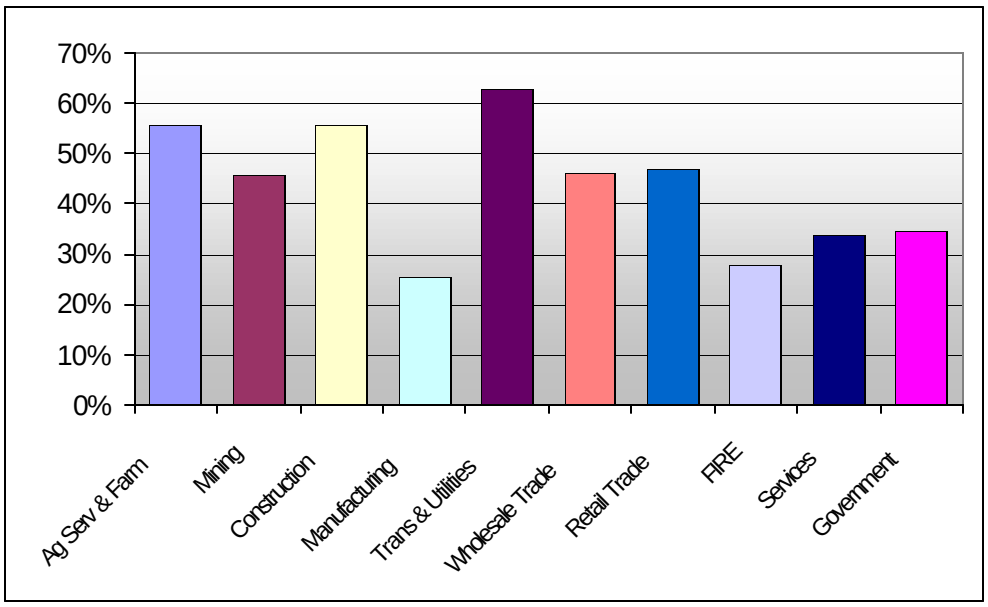
Figure 54: Hidalgo County Percentage Change in Sector Employment, 1995-1999



Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

Changes in income, by sector, over 1995-1999 have some asymmetries with employment change. For example, the large percentage increase in agricultural services and farming income (55.7%) (Figure 55) comes with a relatively modest (11.3%) increase in employment (Figure 54).

Figure 55: Hidalgo County Percentage Change in Sector Income, 1995-1999



Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

Table 16 partitions the total change in income over 1995-99 by sector. Notice that almost 25% of the income growth in Hidalgo County has been in the government sector and nearly 18% in the retail trade sector—percentages that are much greater than Texas and the rest of the nation. The service sector in the county was responsible for nearly 21% of the income growth, but that was far less than what the service sector contributed to either state or national income growth.

Table 17: Sector Contribution to Income Growth, 1995-99

Industry Sector	Hidalgo County	Texas	United States
Agricultural services & farming	5.0%	2.2%	1.5%
Mining	1.3%	4.2%	0.6%
Construction	8.3%	7.4%	7.5%
Manufacturing	5.3%	9.7%	9.5%
Transportation and public utilities	8.1%	9.7%	6.8%
Wholesale trade	6.0%	9.0%	6.5%
Retail trade	17.5%	8.7%	8.7%
Finance, insurance, and real estate (FIRE)	3.1%	9.5%	13.3%
Services	20.5%	30.7%	35.5%
Government and government enterprises	24.9%	9.0%	10.1%

Source: U.S. Department Of Commerce--Economics And Statistics Administration
Bureau Of Economic Analysis--Regional Economic Information System

Hidalgo County's Manufacturing Sector

Manufacturing plays a relatively small role (7%) in Hidalgo County's economy but its importance as a "leading" sector, one that adds value, needs to be emphasized. Given the key role Hidalgo County's manufacturing sector will play in the future of the region's economic development, a more detailed study was carried out by a survey of 163 manufacturing concerns in the county.[5] Some general results are presented in Table 17.

Table 18: Data on Manufacturing Enterprises in Hidalgo County

Number of Employees	
over 500	2%
100 to 500	25%
50 to 100	10%
10 to 50	33%
less than 10	30%
Median Number of Employees	22
Median Annual Sales	$ 1,350,000

Because manufacturing is a value added activity, it is important to know where the materials for the manufacturing come from and where the products are ultimately sold (Table 6). The regions chosen for analysis were: Local, Texas (except Local), the United States (except Texas), Mexico, and Foreign (except Mexico). The interrelationships between these five regions as

[5] This survey was conducted by the Texas Manufacturing Assistance Center of the University of Texas – Pan American's Center for Manufacturing.

sources of material and markets for product are presented in Table 18 and also represented in Figure 56 and Figure 57. Fifty-eight (58) firms provided enough information to allow them to be included in the analysis. The data has been scaled so that the entire manufacturing market has been given the value of 1000.

Table 19: Source of Materials and Market Interrelationships in the Manufacturing Sector

		MARKET					
		Local	Texas	US	Mexico	Foreign	Total
MATERIALS	Local	70.83	10.16	3.70	52.13	6.56	**143.39**
	Texas	116.36	28.98	52.46	58.37	1.06	**257.22**
	US	39.10	115.61	113.77	179.85	5.21	**453.55**
	Mexico	9.42	2.45	100.97	1.59	2.40	**116.84**
	Foreign	2.40	2.46	20.88	3.00	0.24	**28.99**
	Total	**238.12**	**159.67**	**291.79**	**294.93**	**15.48**	**1000.00**

Table 18 indicates that the Mexico, U.S., and Local markets for Hidalgo County's manufactured goods are roughly the same, the Texas market significantly less, and the Foreign market small (1.5%). The sources of the materials for the manufacturing sector are primarily the U.S. and Texas (combined 71%).

Figure 56: Source of Materials by Market in the Manufacturing Sector

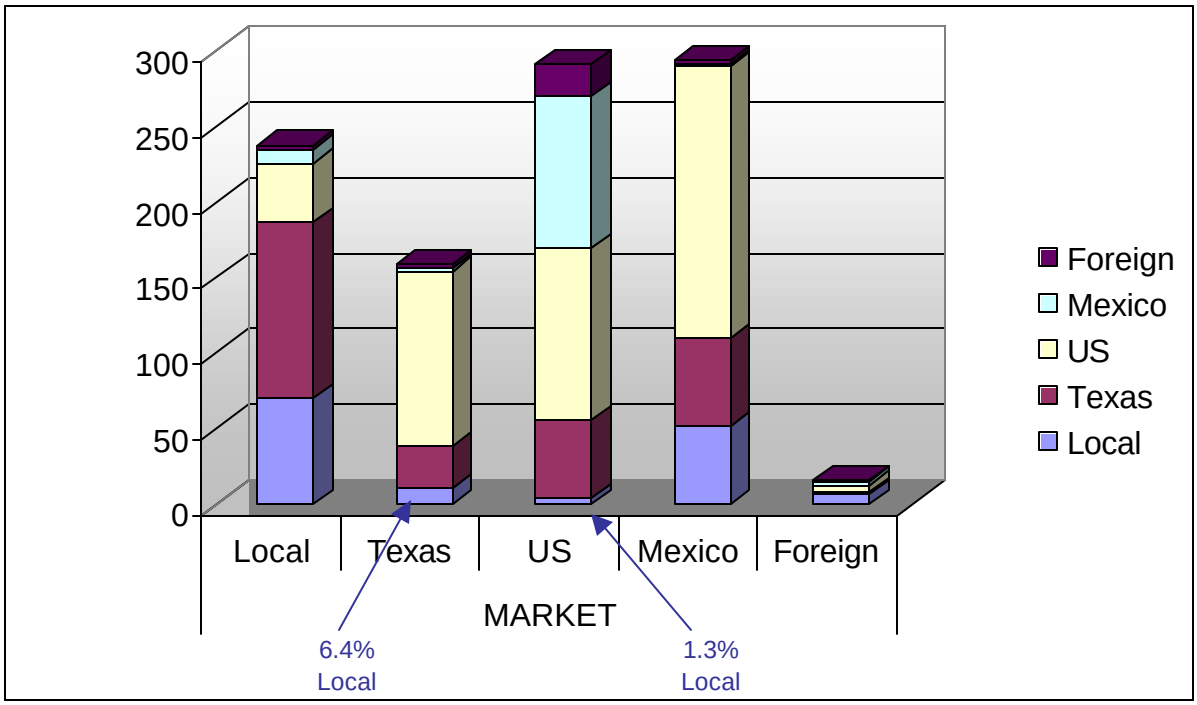
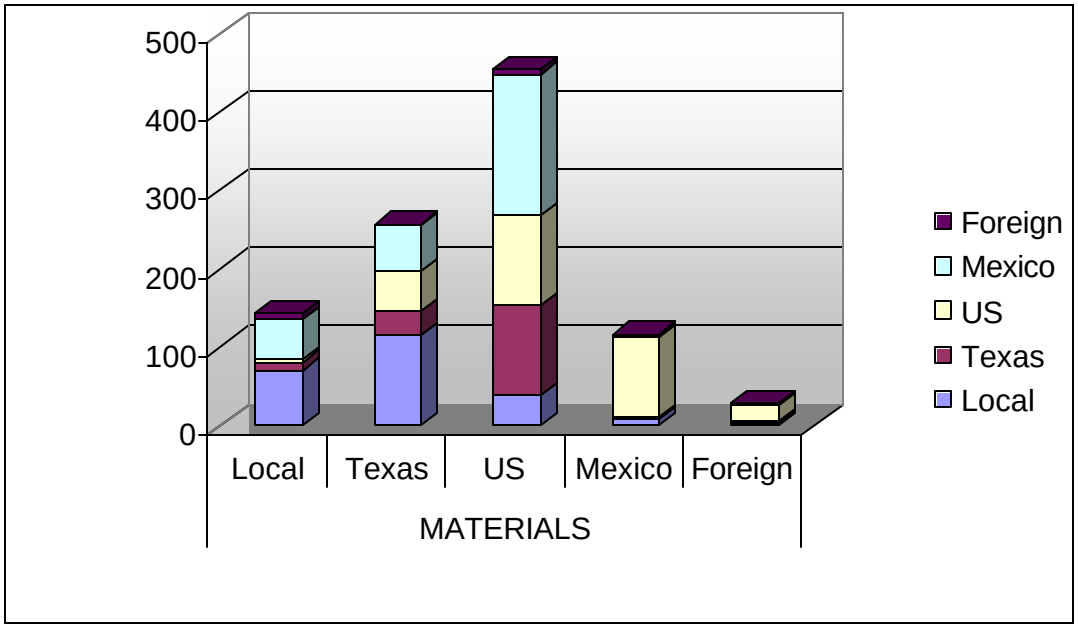


Figure 57: Market Destination for Materials in the Manufacturing Sector



Local materials provide only 1.3% of the materials for the U.S. market and only 6.4% of the materials for the Texas market. In contrast, 17.7% of the Mexico market and 29.7% of the local market come from locally provided materials. This seems to present an opportunity for the growth of local business as suppliers for the manufacturers selling to the U.S. and Texas markets. What must be done is to conduct a more detailed analysis of the companies manufacturing for those markets to determine what supply gaps might be filled by local enterprises. The data available at this time does not permit such an analysis.

The Healthcare Industry in the Lower Rio Grande Valley

More than 80 percent of the regional business leaders surveyed identified health services as the leading industry for job creation and economic development over the next five to ten years (see p. 105). This section examines the healthcare industry, the infrastructure surrounding this industry, and the supportive environment for the healthcare industry development.[6] This profile is of the Lower Rio Grande Valley (LRGV), encompassing primarily Hidalgo and Cameron Counties (Starr and Willacy Counties being quite small are not generally included in the data).

The healthcare industry is an indispensable part of the broader healthcare system. Public health efforts, provided and supported by federal, state, and local government and interconnected with healthcare industry create the holistic system that is key to the health and economic well-being of a region's population.

Increasingly the healthcare industry is an important player in the region's economy. Key stakeholders in the LRGV region representing cities, communities, academic institutions, businesses and local government have worked for the development of the region (Campos 2001).

The Size and Scope of the LRGV Healthcare Industry

According to the data from the InfoUSA American Business Disk, currently 2229 healthcare industry-related firms operate in Cameron and Hidalgo counties.[7] As illustrated in Table 19, healthcare business activities cover hospitals, services and laboratories; the majority of LRGV healthcare-related business is private medical practice.

Table 20: Distribution of LRGV Healthcare Firms by Sector

Subsector	Cameron	Hidalgo
Hospitals and Medical Centers	10	23
Health Services (home, mental, other)	69	111
Other Medical Units	34	51
Doctors' Offices and Nursing Services	615	1003
Medical Laboratories	42	33
Insurance Companies	5	9
Medical Device Suppliers and Manufacturers	24	52
Infrastructure around Health Units	56	92
TOTAL	855	1374

[6] The healthcare industry is very broad. It includes private and public hospitals, medical centers, academic research institutions, and other medical units, as well as pharmaceutical and biotechnological industry, medical devices firms, and private research laboratories.

[7] Source: Unless otherwise stated all business-related information is from the InfoUSA American Business Disk.

It is interesting to note that there are no pharmaceutical companies and biotechnology firms in Cameron or Hidalgo County. These types of companies tend to locate 1) near academic health centers for industry leaders to have access to needed research or 2) in areas where there is a large concentration of skilled workers.

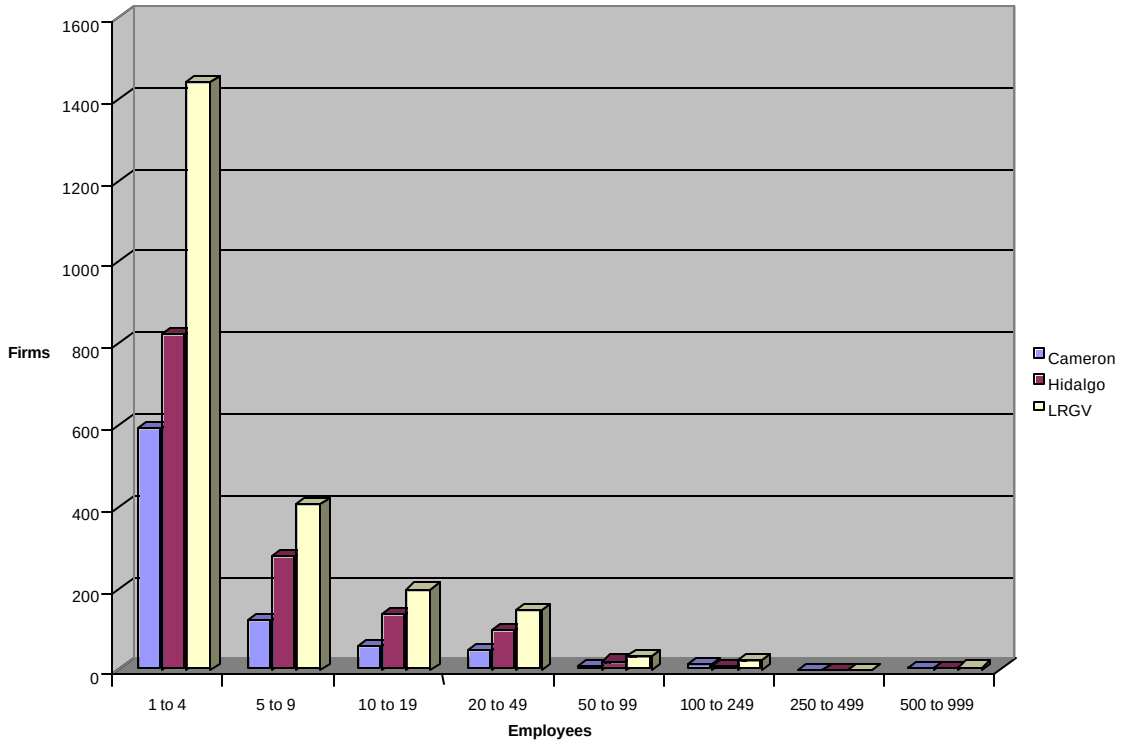
Table 20 illustrates the geographic distribution of healthcare businesses. In Hidalgo and Cameron counties, seventy-five percent of all healthcare business is located in McAllen, Harlingen, Brownsville, Edinburg, and Weslaco. This distribution can be explained by population density as well as the tendency for healthcare firms to cluster around major hospitals and medical centers.

Table 21: Distribution of LRGV Healthcare Firms by City

CAMERON		HIDALGO	
HARLINGEN	393	MC ALLEN	703
BROWNSVILLE	381	EDINBURG	185
SAN BENITO	41	WESLACO	164
PORT ISABEL	10	MISSION	155
S PADRE ISLAND	9	PHARR	79
LOS FRESNOS	8	DONNA	17
LA FERIA	6	ELSA	16
SANTA ROSA	4	MERCEDES	14
RIO HONDO	2	ALAMO	12
OLMITO	1	SAN JUAN	12
		HIDALGO	9
		EDCOUCH	3
		SULLIVAN CITY	3
		LA VILLA	1
		PENITAS	1
TOTAL	855		1374

The majority of firms are small with fewer than 10 employees. These are mainly doctors' offices and medical laboratories as well as a few wholesale suppliers of medical equipment. A comparison of LRGV healthcare firms by number of employees is presented in Figure 58.

Figure 58: Comparison of LRGV Healthcare Firms' Employees



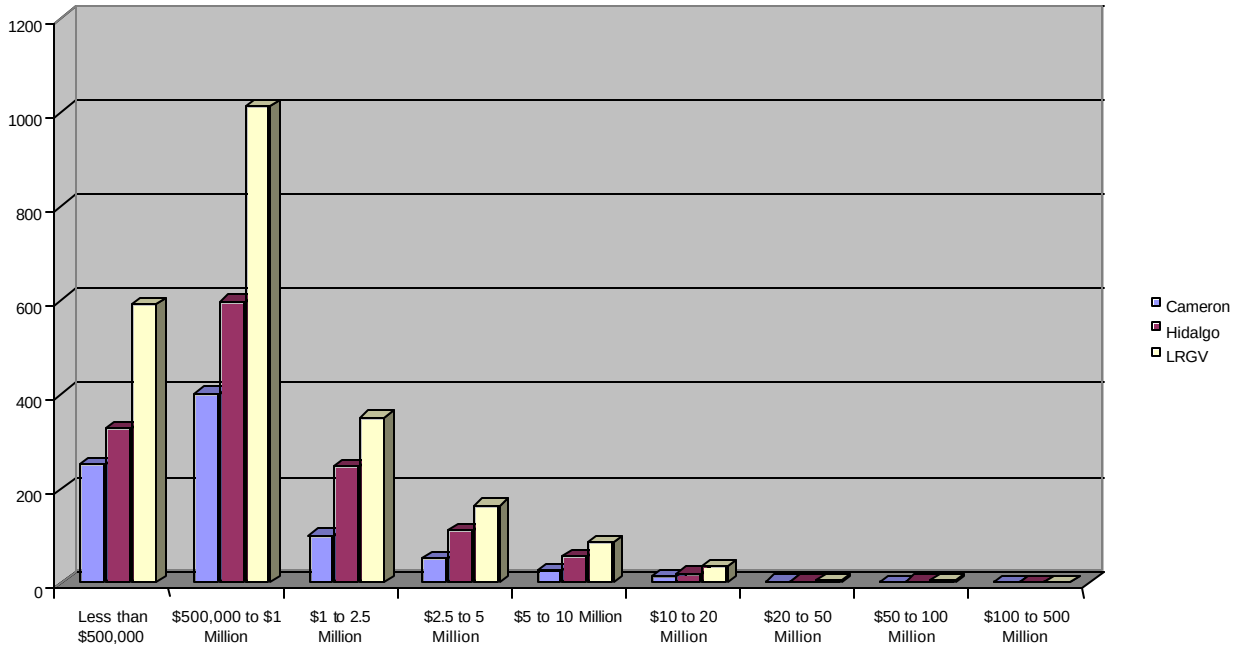
The biggest healthcare employers in the Valley are:

- APC Home Health Services in Harlingen with 3,494 employees[8]
- Texas Visiting Nurses Services in Harlingen with 3,246 employees
- Valley Baptist Medical Center in Harlingen with 2,321 employees
- McAllen Medical Center with 2,146 employees
- Knapp Medical Center in Weslaco with 1,007 employees

Annual sales of the majority of healthcare industry firms are less than $2.5 million and 50 percent of all LRGV healthcare firms have sales between $500,000 and $1 million. Figure 59 gives more details about the LRGV healthcare industry annual sales.

[8] APC Home Health Services and Texas Visiting Nurses Services data are from the Texas Workforce Commission. Data on these businesses was not available through InfoUSA American Business Disk.

Figure 59: Comparison of LRGV Healthcare Firms' Annual Sales



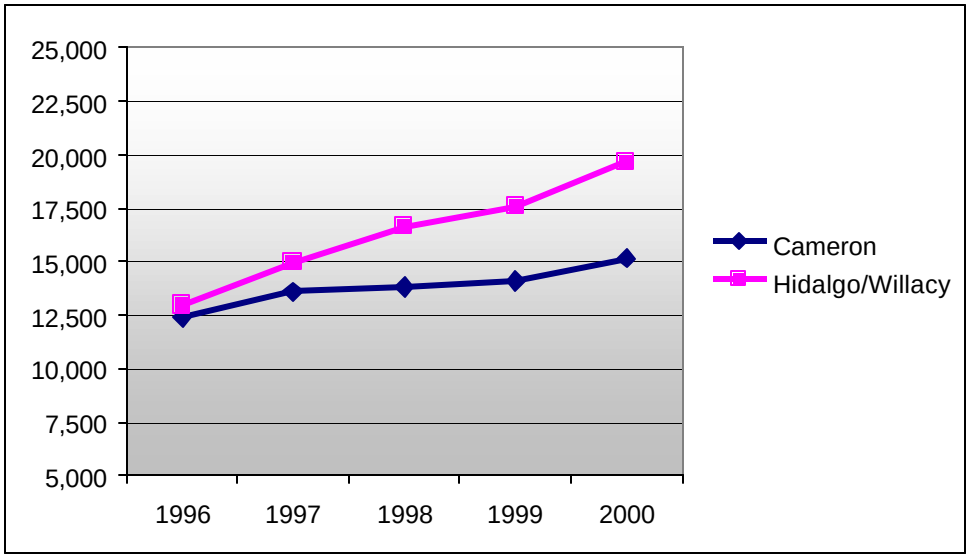
Among all LRGV healthcare industry firms there is only one that serves as a headquarters. Sunglo Home Health Services, Inc. provides nursing, social and rehab services to homebound Medicare patients. Its branches are mostly located inside Cameron County, but they also have branches in other parts of Texas. In Cameron County, 35 from 855 firms are branches of different US and Texas organizations and in Hidalgo County 42 of the 1374 firms are branches.

Employment

As of the first quarter of 2000, employment in the healthcare sector was 15,148 in Cameron County and 19,672 in Hidalgo and Willacy counties[9] (Figure 60). During the last decade employment in the sector has increased 66% in Cameron and 117% in Hidalgo and Willacy counties (http://socrates.cdr.state.tx.us).

[9] The information of employment in the health sector separately for Hidalgo county was not available for this report.

Figure 60: Growth of Healthcare Sector Employment, 1996-2000



Compensation

The salaries of the healthcare industry employees in the LRGV are generally lower than the state average. However, the disparities are not consistent; some occupations are 45% below state averages while others are 35% above. For example, Pediatricians are paid around $16, 000 more per year statewide, but physician assistants receive $16,000 more than the Taxes average. Health educators in Cameron County receive approximately $6,000 more than statewide, but those in Hidalgo County receive $4,000 less than the Texas average. See Table 21 for more details on employment and wage differences in the healthcare sector. These data are from the Texas Workforce Commission. Shaded cells indicate pay rates that are higher than state average.

Table 22: Healthcare Industry Wage Comparisons

OCCUPATION	Cameron	Difference from State Average	Hidalgo	Difference from State Average	Statewide
Health Educators	$40,963	+18%	$30,130	-13%	$34,630
Healthcare Support Workers	$18,318	-6%	$16,660	-5%	$19,500
Medical and Public Health Social Workers	$32,557	0%	$25,460	-22%	$32,450
Physician Assistants	$63,319	+35%	$63,560	+35%	$46,960
Medical Assistants	$14,614	-26%	$15,420	-22%	$19,650
Registered Nurses	$46,838				$42,620

		+10%	$43,690	+3%	
Licensed Practical and Licensed Vocational Nurses	$28,788	+1%	$ 32,520	+14%	$28,580
Medical and Health Services Managers	$47,095	-9%	$ 48,230	-6%	$51,520
Medical Secretaries	$17,061	-24%	$ 19,270	-15%	$22,570
Medical and Clinical Laboratory Technicians	$24,683	-6%	$ 24,600	-6%	$26,240
Home Health Aides	$13,297	-43%	$ 12,890	-45%	$23,340
Pharmacists	$64,565	0%	$ 68,280	+6%	$64,410
Pediatricians, General	$109,255	-13%	N/A	N/A	$125,960

Education and Training

Health-related educational facilities of Hidalgo and Cameron counties prepare support medical personnel: technicians, nurses, and medical assistants. As of yet, there is no medical school locally, so there is no local training of higher-level medical professionals such as general practitioners or specialists. This will change when the Regional Academic Health Center (RAHC) begins its programs for third- and fourth-year medical students in the fall of 2002. Table 22 gives illustrative examples of healthcare-related curricula offered by the principal higher education institutions in the LRGV, namely the University of Texas – Pan American, the University of Texas at Brownsville, South Texas Community College, and Texas State Technical College.

Not included in the table is the newest program, a cooperative Doctorate in Pharmacy between UTPA and the University of Texas at Austin. In this program, students will complete the first two years of their pharmacy program on the UTPA campus in Edinburg, finish the rest of their academic program in Austin, and return to the Valley for their residency.

Table 23: LRGV Post Secondary Education in Healthcare

	Certificate/Associates Degree	Bachelors Degree	Masters Degree	Remarks
UTB	Emergency medicine Medical laboratory technician Radiology therapy technician Respiratory therapy technician Nursing Medical Assistants Medical Transcription	Nursing	College of Science, Mathematics and Technology at UTB offers Master of Science on Interdisciplinary Studies degree with a concentration in biology.	School of Health Services offers variety of degrees in a number of health disciplines. Distance education facilities for nursing and respiratory technician training.
TSTC	Biomedical engineering technology Chemical technology Dental laboratory technology Emerging medical technology Health information technology Surgical technology			Through "College Connections" program TSTC cooperates with high schools of the area and offers juniors and seniors the courses in health science technology, health science occupation, family health needs.
UTPA		Clinical laboratory sciences Nursing Rehabilitative services Communication disorders Health & kinesiology Social work	Communication sciences and disorders Rehabilitation counseling Nursing Social work.	Offers bachelor and master degrees through the College of Health Sciences and Human Services and College of Education. Master degree in nursing is also available on-line.
STCC	Nursing Emergency medical technology Health information Health unit coordination technology Medical information technology Radiology technology			

The private sector is also an important source of healthcare training programs. Valley Regional Medical Center has teaching programs for nurses and physicians. Valley Baptist Medical Center trains its employees. Edinburg Regional Medical Center also provides on-line courses in different health disciplines.

The Medical Education Division of the Lower Rio Grande Valley Regional Academic Health Center (RAHC) which is planned to open in 2002 will provide undergraduate and graduate medical education programs specifically designed to target the needs of the population of the Lower Rio Grande region (The Lower Rio Grande Valley Regional Academic Health Center 2000).

Healthcare Labor Shortages

Despite growing educational and training opportunities in healthcare, the Valley is experiencing an acute shortage of healthcare professionals. Table 23 gives the number of people in each county per trained healthcare professional as well as the percentage by which Cameron and Hidalgo fall short of Texas averages (Texas Higher Education Coordinating Board and Texas Department of Health 2000).

Table 24: Population per Healthcare Professional in the LRGV

Occupations	Cameron County	% of Texas average	Hidalgo County	% of Texas average	Texas
Primary Care Physicians	1,793	87.1%	1,793	87.1%	1,562
General Dentists	6,077	45.2%	6,401	42.9%	2,748
Registered Nurses	239	70.3%	250	67.2%	168
Physician Assistants	17,271	61.2%	13,546	78.0%	10,563
Pharmacists	2,232	60.0%	2,327	57.5%	1,339

There are a number of explanations behind the shortage of healthcare professionals in border areas including: 1) difficulty in attracting professionals, 2) lower quality of life (e.g. schools, job opportunities for spouses), and 3) out-migration of qualified graduates, which is exacerbated by the poor salaries offered in the area (Texas Higher Education Coordinating Board and Texas Department of Health 2000). As a result of this unsatisfied demand of professionals, the salaries for certain occupations sometimes exceed the statewide average.

Science and Technology Based Research and Development

The LRGV is not yet known as a place where medical research takes place, neither in public nor in private sector[10]. In the public sector the research activity is mainly conducted in Hidalgo County at UTPA in the College of Health Sciences and Human Services and in the Department of Health and Kinesiology. Some research activity is also conducted in the Edinburg Regional

[10] The authors of the report have found only one verification of research activity in the private sector in Cameron County: Heritage Valley Gardens, an Alzheimer's care facility houses behavioral healthcare center, an outpatient rehabilitation facility, a research and teaching centers (Pettit 1998).

Medical Center in the department of vascular surgery and the department of urology, which has ongoing research on a treatment that may prevent the spread of prostate cancer to other organs.

The cardiologists of Heart Center of South Texas at McAllen Medical Center also conduct research in specific areas; more research is also going on in the county's Vannie E. Cook, Jr. Center in order to improve treatment techniques for the patients with different forms of cancer.

The Regional Academic Health Center

The plan to construct Medical Research Division of the Lower Rio Grande Valley Regional Academic Health Center (RAHC) in Edinburg will strengthen Hidalgo County's position as a health research center. When the facility launches its operations in 2003. Research areas will include:

- Diabetes
- Emerging infectious diseases
- Aging, environmental health
- Mental health
- Health services research

Areas under consideration for future research are:

- Biometry
- Biostatistics
- Epidemiology
- Animal modeling

The focus is to build on existing faculty research expertise as well as institutional resources and infrastructure available through the University of Texas Health Science Center at San Antonio (UTHSCSA), which is designated to oversee the research operations through UTPA. UTPA has computing and engineering capabilities that complement well the biomedical research focus of the RAHC Medical Research Division.

In addition, a program in pharmacy will be included among RAHC's research activities. This program is designed to encourage high school students to consider pharmacy as a career opportunity (Lower Rio Grande Valley Regional Academic Health Center 2000).

Civic Infrastructure

The most prominent result of regional development efforts is the establishment of Lower Rio Grande Valley Regional Academic Health Center, which serves Cameron, Hidalgo, Starr and Willacy counties. The RAHC will benefit all the communities of the Valley and complement the resources available through the existing medical and higher education infrastructure (Lower Rio Grande Valley Regional Academic Health Center 2000). RAHC is expected to bring approximately $100 million annually in economic growth (Guajardo 1998).

The RAHC, planned originally to be built on one location will now situate its medical education division in Harlingen and McAllen, public health division in Brownsville and medical research division in Edinburg. Different sets of stakeholders have, in significant ways, contributed to the development of the RAHC:

- City residents have donated money (Guajardo 1998)
- Physicians from the Valley community agreed to teach in RAHC educational programs on a voluntary basis
- Organizations donated land for RAHC's building (Valley Baptist Medical Clinic donated 26.2 acres of land, Texas Southmost College – 8 acres, City of Edinburg—6 acres (Spruill 1999)
- Different private and public hospitals, medical centers, and doctors' offices will serve as in- and out-patient training facilities for medical students (Lower Rio Grande Valley Regional Academic Health Center 2000)
- Local government representatives together with the community members prepared proposals for RAHC together and made their cities attractive locations for the center.

The area's key asset was commitment and strength of the communities (Lopes 1998)[11].

Cross-Border Relations

The RAHC will develop binational education and training programs through bringing unique health problems of U.S./Mexico border region to the students' and residents' attention (Lower Rio Grande Valley Regional Academic Health Center 2000). In this respect the RAHC will be one of the multiple synergic attempts to formulate holistic approach toward cross-border health problems.

A Binational approach to the border health issues became more promising after the North American Free Trade Agreement (NAFTA) in 1994. Although NAFTA opened doors for improved trade in many products, trade in services, particularly health services, has been a complex issue requiring further development (Bell 2001). The possibilities and limitations of developing health networks between Mexican and US medical entities have yet to be explored. Many factors challenge the creation of binational health networks: 1) continuing barriers to trade include licensing and certification restrictions on health practitioners and insurance companies, 2) long-standing misperceptions between private physicians and consumers on both side of the border, and 3) the size and stability of the private healthcare market in Mexico (Albro and Norton1997). Still, health providers, hospitals, and insurance companies on both side of the border show growing interest in seizing a share of the market created by NAFTA (Albro and Norton1997). Networking is becoming more intense especially on the local level, between the sister cities at the border (e.g. Brownsville/Matamoros; McAllen/Reynosa) and directly between the hospitals and other health units[12].

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[11] Here is another example of cooperation between business and academia. Medquist, the largest medical transcription company in the country, which plans to place its facility in Brownsville, shows strong commitment in developing medical transcription courses in UTB. Although students, who graduate this program, may work where they choose, Madquist expressed its readiness to hire every student that meets speed and accuracy requirements (http://ntmain.utb.edu/contedu/medtrans.html).

[12] As an example, McAllen Medical Center in McAllen began developing an international program in 1995. The center established agreement with one of the leading private health insurance company in Mexico (Grupo Nacional Provincial), which gives the hospital preferred provider status in the Lower Rio Grande Valley for insured with international coverage. The Center is also negotiating directly with physicians and private hospitals in Reynosa and

The liberalization of trade regime under NAFTA gives U.S. and Mexico more opportunity to leverage their comparative advantages in healthcare. For example, generally medical services are cheaper in Mexico, so the flow of U.S. citizens looking for treatment in Mexico is increasing. These patients mostly prefer to be treated for minor and chronic conditions, whereas for surgical and obstetric services they still prefer the facilities in U.S. More detailed analysis also shows that Spanish-speaking and uninsured U.S. citizens dominate among those who cross the border for medical needs (Warner and Reed 1993). As for a market of medical devises, low-tech products are mostly produced in Mexico and imported to US, while high-tech instruments and equipments are generally manufactured in US and imported to Mexico (Hall and Jahnke 1997).

The U.S. government strongly supports border health issues through different programs. Emergency medical services, chronically ill and disabled children's services programs, breast and cervical cancer control and kidney healthcare programs are among many that aim to improve health conditions and developing healthcare sector at the Texas-Mexico border (Texas Department of Health, www.tdh.state.tx.us/dpa).

By and large, the healthcare industry in Cameron and Hidalgo counties is developing steadily. The support and involvement of local communities and government and the attention that is paid to the development of US-Mexican border region, gives hope that healthcare sector may become substantial wealth-creating sector of the region.

Monterrey to promote cross-border relationships. The center even tries to establish training programs for physicians from Mexico (Albro and Norton 1997).

The Technology Sector

In 1999, there were 14,419 enterprises in Hidalgo County[13]. Of these, 363 (2.5%) could be classified (via SIC code) as *technical*. The American Electronics Association (AeA) has developed a scheme, again using SIC codes, to define "Hi Tech." Using that scheme, the following diagram illustrates the composition of the county's *technology sector*.

Figure 61: Hidalgo County's Technical Sector

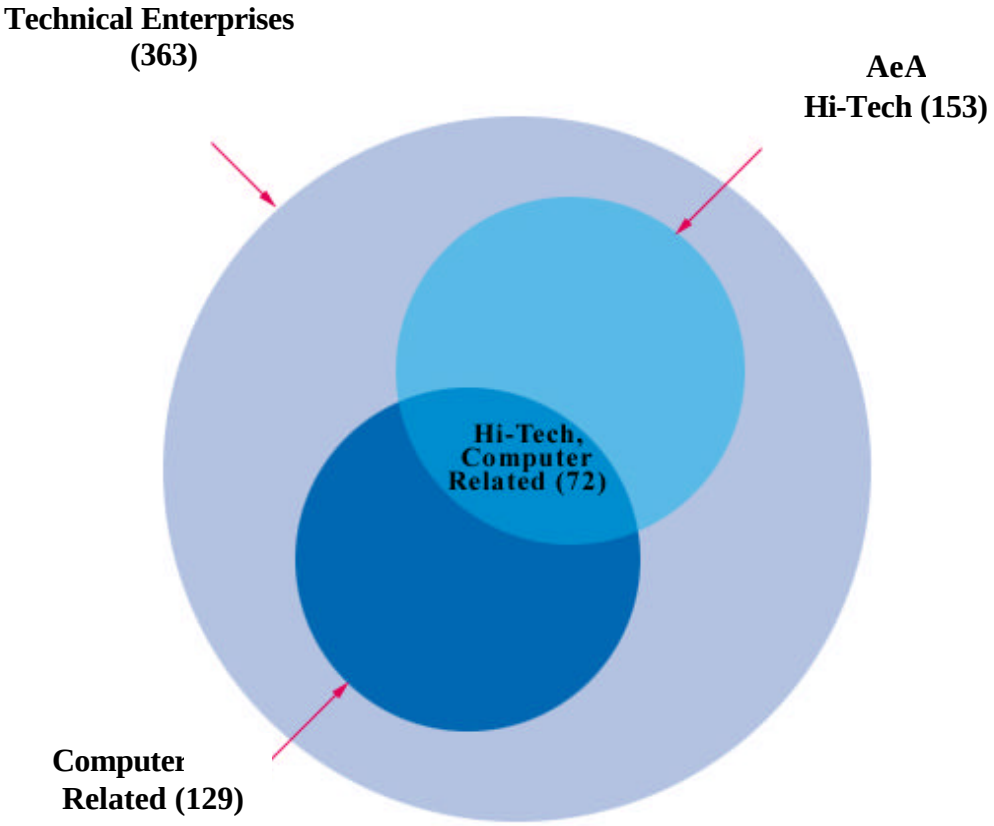


Table 24 shows data collected on a survey of these technical enterprises. The survey had a 22% response rate.

Table 25: Data on Technical Enterprises in Hidalgo County

	Number of Employees				Median
	9 or less	10-20	>20	Median	Annual Sales
AeA Hi-Tech	75%	4%	21%	6	$ 1,000,000
Computer Related	82%	9%	9%	6	$ 1,000,000
Hi-Tech Computer Related	72%	9%	19%	6	$ 900,000
Technical	61%	18%	21%	7	$ 1,400,000

[13] Source: InfoUSA American Business Disk

Based on these data, Hidalgo county's technology sector is dominated by small businesses (only 21% having more than twenty employees) with modest annual sales.

Additional data about the AeA Hi-Tech sector was obtained from the InfoUSA databank. Table 25 summarizes the number of employees and annual sales for the 154 firms in that databank. Again we see a dominating number of small firms with less than nine employees and with sales under $1 million per year.

Table 26: Details on the AeA Hi-Tech Sector in Hidalgo County

Number of Employees	Count	Annual Sales	Count
1 to 4	100	Less than $500,000	59
5 to 9	39	$500,000 to $1 Million	37
10 to 19	5	$1 to 2.5 Million	37
20 to 49	6	$2.5 to 5 Million	11
50 to 99	2	$5 to 10 Million	7
100 to 249	1	$20 to 50 Million	1
500 to 999	1	$100 to 500 Million	1

Table 26 lists the twenty largest AeA Hi-Tech firms in Hidalgo County, based on annual sales.

Table 27: Twenty Largest AeA Hi-Tech Firms in Hidalgo County

NAME	CITY	EMPLOYEES	SALES
IEC EDINBURG	EDINBURG	50 to 99	$100 to 500 Million
INTELLICALL INC	MC ALLEN	50 to 99	$20 to 50 Million
JOHNSON CONTROLS INC	PHARR	50 to 99	$5 to 10 Million
COMMUNITY FAX CTR	WESLACO	20 to 49	$5 to 10 Million
STAR VISION	MISSION	20 to 49	$5 to 10 Million
VALLEY WIDE RESTORATION SVC	PHARR	20 to 49	$5 to 10 Million
BARRERA'S SUPPLY CO	MISSION	10 to 19	$5 to 10 Million
GENERAL SATELLITE	MISSION	10 to 19	$5 to 10 Million
TEL COM EQUIPMENT INC	MC ALLEN	20 to 49	$2.5 to 5 Million
KENT DATACOMM	MC ALLEN	20 to 49	$2.5 to 5 Million
VINTAGE GARDEN INTERNET CAFÉ*	EDINBURG	20 to 49	$2.5 to 5 Million
SOUTHWESTERN BELL	ALAMO	10 to 19	$2.5 to 5 Million
CAPITAL TELECOMMUNICATIONS INC	MC ALLEN	5 to 9	$2.5 to 5 Million
ITI	MC ALLEN	5 to 9	$2.5 to 5 Million
SANCHEZ JESSIE	EDINBURG	5 to 9	$2.5 to 5 Million
SMART COM TELEPHONE	MC ALLEN	5 to 9	$2.5 to 5 Million
SURE-TEL	MISSION	5 to 9	$2.5 to 5 Million
TEXAS IN TOUCH COMMUNICATIONS	MC ALLEN	5 to 9	$2.5 to 5 Million
VALUELINE-ACG	MC ALLEN	5 to 9	$2.5 to 5 Million

*ceased operations as of 2001

An attempt was made to conduct a phone interview with each of the high-tech firms in Hidalgo County and gather more detailed information about the company (Table 27). Thirty-two firms participated in these interviews.

Table 28: Details on High Tech Firms

Company Name	Number of Employees	Year Established	Market	Export/ Import	Type of Business
Barrera's Supply	10	1918	National	Sales to Mexico	Hydraulic & industrial equipment
Computer Command	2	1965	Regional	Sales to Mexico	Computer Repair
C&J Enterprises	2	1970	National	Sales to Mexico	Manufacture Cash register machines
IEC Edinburg	90	1970s	National	Mexico Suppliers	Assemble Circuit boards
Hamer Enterprises	15	1975	National		Software
Argentina 78	6	1976	Local	Sales to Mexico	Consumer Electronics
Tel Com Equipment	14	1980	Regional	Sales to Mexico	Phone systems, LAN, Comp. Nets
SAI multi-interface	3	1980	Regional	Sales to Mexico	IT consulting for small business & real estate software
Intellicall Inc	7	1984	National	Sales to Asia	Manufacture "smart" pay phones
Avnet/Kent Datacomm	12	1985	Global	India, Russia, Japan	Computer Networking for Education Intuition
Johnson Controls	23	1985	Global	Maquillas	Control Ports / Industrial supply
Delta Specialties	6	1985	Regional	Sales to Mexico	Manufactures of traffic signals
Cablelink Inc	100	1989	National	Japan Suppliers	Manufacture custom Cable & connects—Motorola
Border Technologies	2	1995	Global	Sales to Mexico & Asia	Capital Electronics Equipment
Rio Data	5	1995	Local	Sales to Mexico	Cell Phone, pagers, auto tint
Star Vision	23	1995	National	N/A	Satellite TV
General Satellite	74	1996	Regional	N/A	Satellite TV
Industrial Coils	10	1996	National	Sales to Mexico	Manufacture industrial Solenoid Valves
Hiline Internet	7	1996	Regional	Sales to Mexico	ISDN, DSL, Broadband
Valuline / Ionex	8	1997	Regional	N/A	Telecom competitor SWB
Estrella	3	1997	Regional	N/A	High School education online for migrants
RGV Wireless	10	1997	Local	Sales to Mexico	Radio Wave Wireless Internet
Quik Internet	3	1997	Regional	Sales to Mexico	DSL, ISDN Broadband
RGV WEBPAGES	10	1998	Regional	Sales to Mexico	Advertising website dev.
Carrier Com	5	1998	National	Customers & Suppliers in Mexico	Telecom, private line fiber from US to Mexico for 1&2 tier Telecom
PC Agents	1	1998	Local	Sales to Mexico	Online services, web design
Page plus Wireless	5	1998	Regional	N/A	Cell Phone w/ internet in future
LCPH Tech Group	6	1998	Regional	N/A	Wireless Commercial T1s
Dish Xpress	2	1998	Local	N/A	Satellite TV
Smart Com Telephone	8	1998	Regional	N/A	Basic internet hook-up
Borderguide.com	7	1998	Regional	Sales to Mexico	Net Guide & advertising
Alpha memory	8	1999	Regional	Sale to Europe & Asia	RAM Chips & computer parts

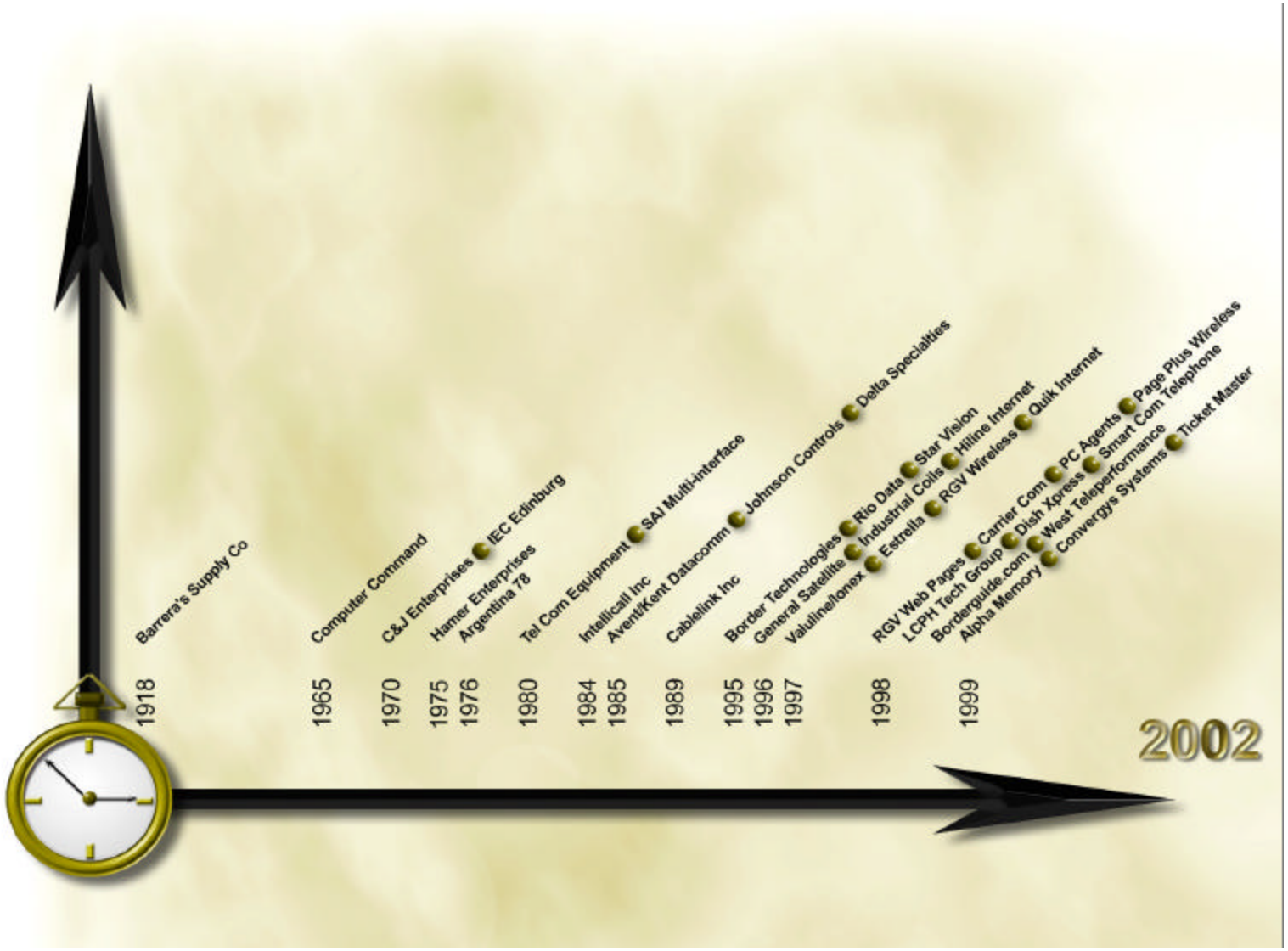
Notes from the phone interviews:

- IEC is downsizing its Edinburg operations and sending all labor to its Mexico Factory. They have had 3 name changes over the last 30 years.
- Tel Com Equipment stated a need for more educated IT engineers, installers and tech staff managers.
- SAI multi-interface expressed negative opinions about Microsoft & thinks they are slowing technology development nationally.
- Intellicall said that they have recently been bought-out and are not sure if Valley operations will continue under new management.
- Kent Datacomm was recently bought-out by and changed its name to AVNET INC.
- Industrial Coils is expecting to begin sales to Mexico within the next 6 months.
- Hiline Internet is expecting sales to Mexico within the next 12 months.
- Estrella is operating within 6 school distracts and has a current class of 51 students enrolled in the GRE via lap top computer courses offered online to migrant students.
- PC Agents thinks that water is the main reason why large tech firm are not in the Valley. He agrees that the canals need to be covered to prevent evaporation. He also suggests that 70% of the water goes to agriculture but they do not pay for the system improvements.
- Alpha Memory Started off with only local customers and has seen business improve 10x from website sales. Currently, he has a customer base in Mexico, Japan and Western Europe.

A timeline of these firms gives a picture of the growth of Hidalgo County's high-tech sector (Figure 62). Some details of note:

- Fifty-eight percent of the firms have been established since 1995
- Twenty-three of these firms have ten or fewer employees
- Nineteen have export or import ties to Mexico and twenty-three have international links
- Twenty focus on local/regional (including Mexico) markets, nine focus on national markets, and three consider themselves global

Figure 62: Timeline of Hidalgo County High-Tech Firms



The Call Centers

What has not been included in the technology sector summaries so far are the newest and largest employers—the call centers, often considered by experts as critical starting point for developing a high tech sector. Within a one year span in 1999-2000, over 3,000 jobs were added to the technical sector by the opening of three "customer contact centers," or call centers. The first, and largest, of these was opened in Pharr in 1999 by the Convergys Corporation. Here is how they describe themselves:

> Convergys Corporation enables companies to create greater value from their customer relationships through the application of billing solutions and interactive customer care. Supported by our fully integrated, multi-channel customer contact centers and state-of-the-art data centers, our solutions offer a "high-tech, human-touch" approach that couples highly skilled customer service representatives with advanced customer and information management technologies.

Convergys employs nearly 1,500 people at its Pharr location. Two other call centers, West Teleperformance (1,000 employees in McAllen) and Ticketmaster (800 employees in Pharr) opened in 2000.

Call centers have been a welcome addition to the Rio Grande Valley economy. In Hidalgo County, the unemployment rate was near 20% for the majority of the 1990s. The area began recruiting call centers in 1997, and by 2001 unemployment has dropped to 13.6 percent. Call Centers are attributed with having a $25 million economic impact on the region and they continue to expand. In addition, call centers require world-class telecom infrastructure and they provide information technology (IT) training for employees. The recruitment of call centers has been an important example of different counties working together to recruit major employers and skilled jobs to the region.

Background

During the 1990s, 568 call centers were set up in 20 states, with Texas receiving approximately 20% or 113 of these new facilities. Call centers are attracted by the bilingual Texas workforce, relatively low real estate cost and the Central Time Zone that facilitates communication with both the East and West coasts. Additionally, from 1996 through 1999, the Texas Workforce Commission created a skills development fund specifically for call center and telemarketing training in Community Colleges statewide. Over half of this $4.7 million in grants went into training programs in non-metropolitan areas. These funds along with the North American Free Trade Agreement help increase the demand for US and Latin American companies to create bilingual call centers in Texas. Based on these criteria, the Lower Rio Grande Valley was a preferred location and over the past decade several call centers have been established along the Texas/Mexico border

Recruiting call centers to Hidalgo County

In the Spring of 1997, community leaders Susan Valverde, McAllen Economic Development Corporation and Oscar Cuellar, Director of the Pharr Economic Development Corporation began

working together to "cold call" and recruit call centers nationwide. This proactive economic development initiative was successful with the recruitment of West Teleperformance to Hidalgo County in 1998, followed by Convergys Systems, Ticketmaster and Western Wireless in 1999. By the summer of 2001, call centers accounted for approximately 3000 jobs in Hidalgo County.

In 1998, Ticketmaster Corporation closed down their 250 employee, 10 year old call center in Pioneer Square Seattle, Washington citing the high cost of telecom services, labor costs, and high employee turnover rates.[14] Management realized that the need had diminished for location specific call centers for customer support. Call centers no longer needed to be located in the areas they served. Ticketmaster also closed its phone centers in Chicago and Denver, noting that the pay required to retain talent in those areas was (on average) $3 to $4 more per hour than in Hidalgo County. The other key factor for their move to the Lower Rio Grande Valley was the relatively low employee turnover rate—approximately one-seventh that of other U.S. call center locations.

> Working with computers and advanced industry software has provided me with great experience and has strengthened my resume to help me begin a career in the technology sector.
>
> Ticketmaster Employee, Cesar Garza, August, 2001.

Pharr officials worked with South Texas Community College (STCC) to create a training facility in a vacant Wal-Mart building. They hosted job fairs to locate the talent and sponsored employment advertising in the local paper. The 800-person, Ticketmaster facility is responsible for in-bound customer service calls, communicating marketing incentives, and tele-sales. Employees are required to have at least a high school education (or equivalent) and be bilingual. Each new employee receives job specific training with Microsoft Word, Excel and an automated customer service system that logs each call into a central database via report forms. These jobs are often seen by employees as a way to enter the high-tech sector.

[14] Ticketmaster Corporation began in 1976 marketing automated ticketing systems for individual sports and entertainment venues. Today, the company is majority owned by USA Network Corp. and Microsoft's co-founder Paul Allen. The company also owns and operates the cityseach.com Internet guide network, a publicly traded company, TMCS on the NASDC. In the second quarter of 2001, Ticketmaster sold over 35% of its tickets via the Internet. The company employees nearly 10,000 phone operators nationwide and handles 160 million calls annually. Ticketmaster, 807 South Jackson St. Pharr, Texas.

Technology Sector Case Study: RGV Wireless

RGV Wireless[15]
McAllen, Texas

Scott M. Fuller moved to Hidalgo County in 1986 for personal reasons. In Dallas, Scott had worked for EDS where his annual income approached $90,000. He took a leave of absence for a move to McAllen, which originally was going to be temporary, and was shocked by the job and compensation offers when he looked for employment in the area. "When Burton Auto Supply offered me a programmer job for $6.00/hour I thought it was a joke." Indeed, $11.00/hour was the highest pay Scott was able to locate in Hidalgo County. During his job-hunting, Scott did receive what he considered sound advice from one of the owner of Burton Auto Supply:

> In the Valley no one will pay you what you are worth. If you want to make a decent living and build a career here you needed to go on your own.

So, Scott began building and selling PCs, which led to consulting jobs, which led to important networking opportunities among local technologists and businesses. Based on the considerable experience he had gained working and being trained at EDS and in working with clients in Hidalgo County [He installed the first Windows 95 based network in the Valley], Scott launched a career in writing books on computer software applications, and computer network security. His publications increased his reputation as a "capable, knowledgeable technology professional" and his working with local clients on current IT challenges increased the relevance and importance of his publications.

This range of activity, networking, and reputation building is what caused Long, Chilton, Payte, & Hardin CPAs to invite Scott to head up their computer consulting division called LCPH Technology Group in 1998. And in early 1999 RGV Wireless was spunout and funded by such partners as GRCI (the for-profit division of Valley Telephone Coop).[16] RGV Wireless was started in 1999 with 4 employees and Scott Fuller as Director. By 2001 the company had grown to 14 employees with a market that centered on Brownsville, Harlingen, and McAllen. The company was initially launched and owned by a consortium led by Long, Payte, & Hardin, a

[15] RGV Wireless basic service is to provide wireless high speed Internet DSL services to business, education, and government clients as a cost effective and efficient alternative to more traditional means of communication such as cooper wires. And indeed the Valley would seem to be the ideal place to launch such as business since wireless communication requires a direct line of sight and non-interfering weather. The Valley's lack of tall buildings and barren, flat, hot, and dry climate with no natural or man-made obstructions provides an ideal location to explore the full potential of this technology. In addition wireless offers cost and efficiency benefits that can provide "leapfrog" opportunities for cross-border and rural communication that are not well served by more hardware intensive and costly alternatives. RGV Wireless has a second advantage to its business model by being a full-service data communication company that provides its clients with a range of value added services from consulting and programming to ensuring dependable connectivity including Internet and email network support, technology consultations, erecting firewalls for security, software and equipment upgrades.

[16] GRCI has provided DSL to rural communities in the Valley for over 5 years. They are the for profit division of Valley Telephone Coop

large accounting firm. This rather complex management structure resulted in 90-day decision cycles that inhibited RGV Wireless from quickly assessing and responding to market opportunities required in a rapidly changing technology and business environment. In summer of 2001, GRCI (Grande River Communications Inc.) bought out the other partners renamed the company Grande River Technology Group and has plans to invest upwards of $1 Million in the 'Technology Group' to increase investment in

1) hiring trained personnel to grow RGV Wireless to around 20 by 2002
2) capital equipment (such as a fleet of service trucks)
3) expanding the customer base to include Laredo, Corpus Christi and the smaller towns in-between
4) using the services of additional regional subcontractors

Scott set to build Grande River Technology Group based on the EDS philosophy of hiring talent based on their ability to learn and quickly add value whether it is based on formal education or on practical work experience. Both types of employees got a chance to prove themselves at Grande River Technology Group. Much of the talent hired by Scott has come from the Valley and has been trained primarily at South Texas Community College (STCC). A few of the early employees were educated outside the Valley (e.g., SMU in Dallas, Rice University) but decided to return to their homes in Hidalgo County to find employment. Some employees were hired for their experience such as "Shane" who had 15 years experience working as an IT supervisor in Houston's ISD. Another employee's wife was from the valley and she convinced Shane to move back to McAllen to take care of her aging mother. But as Scott emphasized,

> You can't recruit talent and build a competitive business by relying on talent moving back to the area based on family ties!

Crossing the digital divide one employee at a time

Grande River Technology Group provides one small but important example how visionary, qualified, and hard working managers and employees and a growing technology firm can change the employment dynamic of the Valley from low wage, low skill work with modest career opportunities to value added, higher pay, enhanced career opportunities.

Frank—an Hispanic born and raised in the Valley—applied for a job with Grande River Technology Group with 8 years experience as an Assistant Manager at Pizza Hut. As Scott emphasized, "This was excellent training for being adaptable, dependable, customer driven, and working long, hard days." Frank also showed desire and career potential by taking computer classes as Texas State Technical College (TSTC) and STCC leading to an Associate's Degree in Computer Maintenance. He has plans to earn a Bachelors degree at UTPA as soon as his wife completes her Masters Degree in Business. Scott describes Frank as a quick learner and one of his most productive employees. The challenge for Scott and Grande River Technology Group is that as Frank enhances his job skills and training he also enhances his employment prospects and indeed Frank has been offered higher paying positions. As Scott concedes, "the challenge for Grande River Technology Group is to provide the work environment, salary, and career growth opportunities to retain valued employees." As a result, Frank and his family, Grande River Technology Group, and the Valley are all winners.

In a relatively small but important way the Grande River Technology Group case and Frank's story are crucial components of successfully building technology companies in the Valley. There are similar stories occurring in other technology firms in Hidalgo County – the challenge is to make these exceptional stories more common.

Building a globally competitive technology company one customer at a time Maersk Medical is a good example of a growing number of small worldwide companies working in profitable niche markets that requires being global in the search for technology, efficiencies, and customers. Maersk makes medical supplies such as surgical masks and breathing tubes. The company's headquarters is in Sweden, North American manufacturing is located in Reynosa, and its main U.S. distribution center located in McAllen. Before using Grande River Technology Group technology, Maresk would often communicate among the three locations using diskettes or CDs that were then delivered by mail. Reliable IT-based communication was not available across the Border. However, mailing diskettes and CDs was not an acceptable mode of communication for a business where change orders are made on an hourly basis. Given the challenge, Grande River Technology Group designed and built Maresk a "virtual private network" that greatly enhanced communication and coordination efficiencies among the firm's operations in Sweden, Reynosa, and McAllen. Currently Grande River Technology Group is working on providing Maresk with voice override technology (data packets) for enhanced cross-border communication.

The Maresk example is a model for the Cross-Border and indeed global leveraging of capabilities. As Scott concluded,

> The Border Region needs to work together to accelerate the development of seamless world-class manufacturing in Northern Mexico and world-class distribution in the Valley. We need to have the Region successfully compete with Asia in terms of low cost, quality manufacturing and compete with California in terms of state-of-the-art distribution.

Technology Sector Case Study: Hamer Enterprises

Hamer Enterprises

4200-AN Bicentennial
McAllen, TX 78504
www.hecorp.com

The Company

In 1975, William and Jodi Hamer launched what was to become one of Edinburg's first and most successful technology company start-ups. The McAllen-based company migrated from an accounting firm to writing software for local schools to track payroll, attendance, and school scheduling; to developing accounting packages for businesses; to an OEM for DEC;and to an IBM partner in 1987. The company has two main businesses:

(1) Texas Logic Inc (TLI) a hardware/software solution company providing clients with overall experience and integration capabilities, and
(2) Easy Access Inc (EAI) providing software solutions for real estate appraisal management, tax billing and collection, and registration management.

Today some of the world's most expensive real estate, in California, Colorado, and Texas, is supported by Easy Access Software. Formed in 1987, EZ-Vote, is a wireless-to-host solution that enables real-time access to voter information. As Bill Hamer states,

> In 1955 an extreme vertical niche left unfilled by IBM's AS/400-based software was voter registration. Before EZ-Vote local and county governments had no way to stream-line their mistake-laden, document-heavy processes of registering voters, now they do.

During the company's evolution to a high-end software developer and provider the firm has received numerous quality and customer awards – in August 2001 Hamer Enterprises was unanimously approved as a member of IBM's Business Partner Alliance of Government Specialty for e-Business

Why McAllen

Bill and Jodi are graduates of McAllen High School and UT – Pan American—Bill earned hisdegree in accounting and Jodi earned her degree in psychology. After marrying the couple decided, for personal reasons, to build their lives and careers in Edinburg. However, choosing to locate the headquarters of their business in Mc Allen has, at times, been a difficult decision to justify. A main challenge is the company's continuing struggle to recruit and retain talent.

Hamer Enterprises seeks employees who are capable programming open-source languages such as Java, JSP, and PHP, working with such software as IBM Web Sphere, and who are also network and web specialists. As Bill observed,

Most of the web developers in the Valley are cosmetic in that they don't include interactive, database, "back office applications" where the web captures the data and does something with it, or adds value to the information.

Hamer Enterprises hires most entry level talent from UT PanAm, STCC (South Texas Community College), and TSTI (Texas State Technical Institute). Their hires benefit from a 6-12 month training period at the company. A few of the best employees choose to remain with the company but many are lured away by $100,000+ salaries offered by companies in Houston, Austin, Dallas and out-of-state. Older employee recruits, also trained on the job, have transitioned from more traditional industries in the region or have moved to the Valley for personal reasons. But a key challenge to growing Hamer Enterprises in Edinburg County continues to be:

- Locating needed and qualified talent in the region
- Recruiting talent to the region
- Retaining talent in the region.

The "Chicken and Egg Challenge": Technology companies don't want to move to the Valley until they believe that there are sufficient supplies of trained workers in key technology and management areas AND area colleges and universities don't want to commit scarce resources to ramping-up to train 100s of engineering and computer specialists until there are sufficient jobs for these graduates.

> "A possible and partial solution," says Bill, "could be to have the region's universities and colleges have more of a state-wide orientation concerning the education of programmers, electrical engineers, and other specialists --- what are or will be the State's needs." The state's Flagship Universities (UT-Austin and Texas A&M) are at capacity in such training, so why not refer the 100s of qualified but non-accepted students to system schools like UTPA. It would be great if we could treat the UT and A&M Systems as a state-wide resource, more like the California school system, where kids could be more effectively referred and located in the most appropriate Texas State school and where UT System resources could be better leveraged in terms of teaching and research.

When Hamer Enterprises hires and trains a quality professional the firm works to keep the employee in Hidalgo County. However, when a key employee decides to move out of the Valley, the company looks for a technology solution. This was the case with a current, very talented programmer who had been with Hamer Enterprises for over 2 years. He wanted to move (for personal reasons) to New Braunfuls, TX—the solution, have the employee work over the Internet using Hamer Enterprises new Virtual Private and Secure Network. To sustain and grow Hamer Enterprises, Bill works to get close to both talent and markets. He has opened operations in San Antonio, Los Angeles, San Diego, and Colorado.

Bill also noted that,

> Hamer Enterprises is challenged by the seeming lack of local county support for his business. Easy Access Inc. sells web-based products to county governments in

> California, Colorado, and Texas including voter registration software to Travis, Cameron, Starr, Jim Wells, and Web Counties. But, we can't get any business in this county—there is no local support of our businesses.

Community Service

Bill and Jodi love their community and over the years they have sought meaningful ways to give back.

During Texas' economic downturn of the late 1980s when oil prices hit rock bottom, the peso was free falling, and Saving and Loan scandals were multiplying, Jodi launched *Successful Attitudes* an exceptionally well-designed magazine for "Sophisticated Living in South Texas." One wall in Hamer Enterprises is covered with awards presented to *Successful Attitudes*. The magazines main purpose was to promote the Lower Rio Grande Valley and to "lift us back up," observed Jodi. Sections of the magazine included human interest, business, culture, agriculture, health, sophisticated living, sports, palate pleasures, travel, history, and technology. A Fall 1990 feature was titled "The Rio Grande Valley: The Whole is Greater than the Sum of its Parts."

> I think UTPA has come a long way, but we are not sufficiently projecting this to Texas or to the rest of the country. Too few people realize that this institution (UTPA) has one of the best engineering programs in the U.S. The perceived quality of the programs is not what is should be in the Valley and it is even worse nationally.

Bill serves on UT-Pan – American's Advisory Board for Computer Science and Engineering programs. He believes in the importance of UTPA to the Valley and to his business and he believes in UTPA's quality programs staffed by dedicated and hard working professors. He is an active supporter of UTPA's scholarship programs that provide needed financial resources that are central to retaining the "best and the brightest" high school graduates in the Valley. One of his main concerns is that such important education programs are continually being threatened by budget cuts, "there just aren't enough resources to go around," says Bill.

> It's great that UTPA want to be a Tier I Research University. As a first step, as a local businessman, I'd suggest organizing Engineering, Computer Science, and the Sciences (Health, Bio-Tech) into separate colleges. Now they are all grouped under one dean. Separate colleges would encourage each dean to be more focused on engaging relevant businesses, fund raising, grant writing, and faculty release time for research. The faculty are doing a great job, but they are overloaded and the most talented are often lured away by schools that pay higher salaries while providing lighter teaching schedules and more research support.

Survey of Region's Business Leaders

During May-June 2001, as part of the Border Development Alliance's (BDA) Border Economic Development Study[17], a survey on the importance of technology-based industries for regional economic development in Hidalgo County was sent to a random sample of 3,000 business leaders in the region. One hundred eighteen (118) respondents returned completed surveys for a response rate of about 4%. Questions were asked about:

- The importance of established and emerging industries for job creation, economic development, and wealth creation in the county in the next 5-10 years
- The importance and effectiveness of factors (e.g., education, work force, utilities) in job creation and economic development
- The importance and effectiveness of strategies (e.g., firm recruitment, firm retention and expansion, entrepreneurship) in job creation and economic development
- The most important factors for accelerating and inhibiting economic development in Hidalgo County in the next 5-10 years.

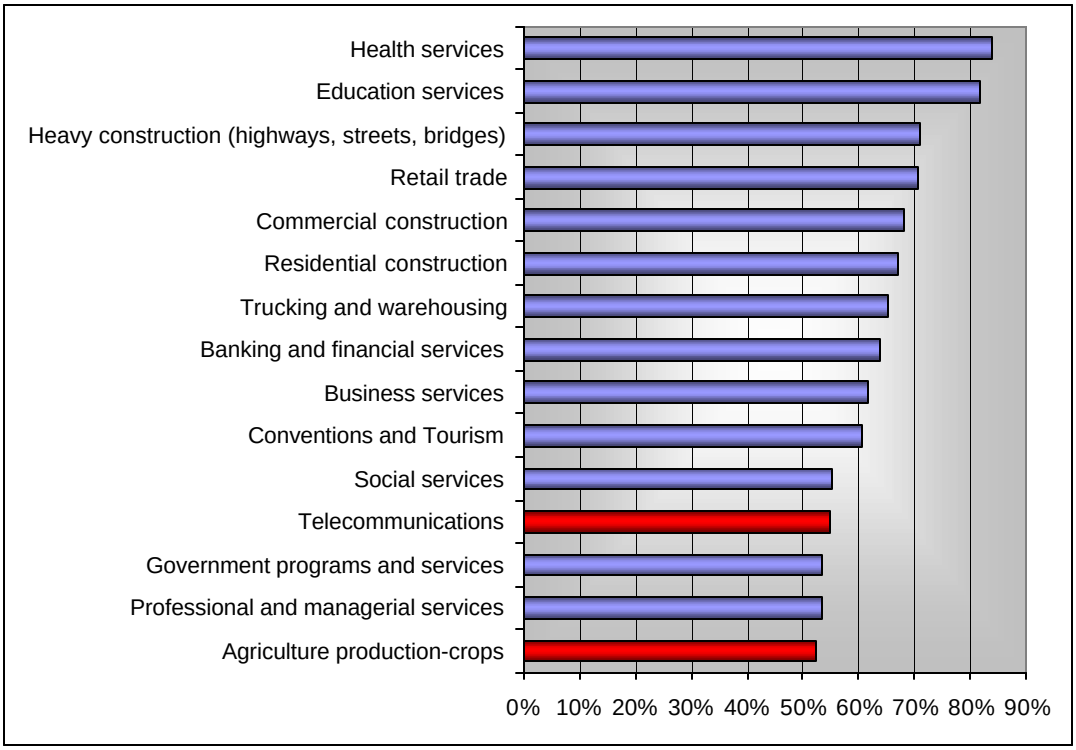
Most Important Established Industries

Hidalgo County Business leader's were asked their opinions about *the most important established industries for job creation and economic development in their region for the next 5-10 years***.** The industry list presented to the leaders reflected the current industry structure in Hidalgo County.

Figure 63 presents those industries considered "important for job creation and economic development" by at least 50% of the respondents. Leading the list, at over 80% each, were the **health services** and **education services**—the two sectors of the economy that currently contribute the most to employment and income in the county. In fact, generally speaking, the business leader respondents confirmed that (in their opinion) **the industries that are currently most important in creating jobs and economic development are to be considered to be most important in the coming 5-to-10 years.**

[17] In early 2001 a HUD Grant was made to four Border Universities—UT-Pan American, UT- Brownsville, UT-El Paso and Texas A&M International in Laredo. Catalyzed by this grant, these universities formed a Border Development Alliance (BDA) to facilitate cooperation and to leverage their educational, teaching, and research assets all along the Border.

Figure 63: Industries Considered Important for Job Creation and Economic Development in the Next 5-10 Years*



**The percentages listed are of those respondents considering the factor "important" as opposed to "somewhat important," "not important," or "don't know."*

It is important to emphasize that with the exception of telecommunications and agriculture production, NONE of the listed industries are "wealth creating industries" in that they do not produce products to sell regionally, nationally, or globally. Indeed, the listed service industries including education, government and business; construction industries; and conventions and tourism require private wealth or government/tax funds to survive. In this regard these are "following" not "leading" industries like manufacturing, information and computer technologies, and software development. These "following" industries while being important to the region for thousands of jobs and services will only grow with the population, tax base, and wealth that is generated by "leading" industries. Also, "following" industries tend to be less well paid and provide fewer career options than do "leading" industries.

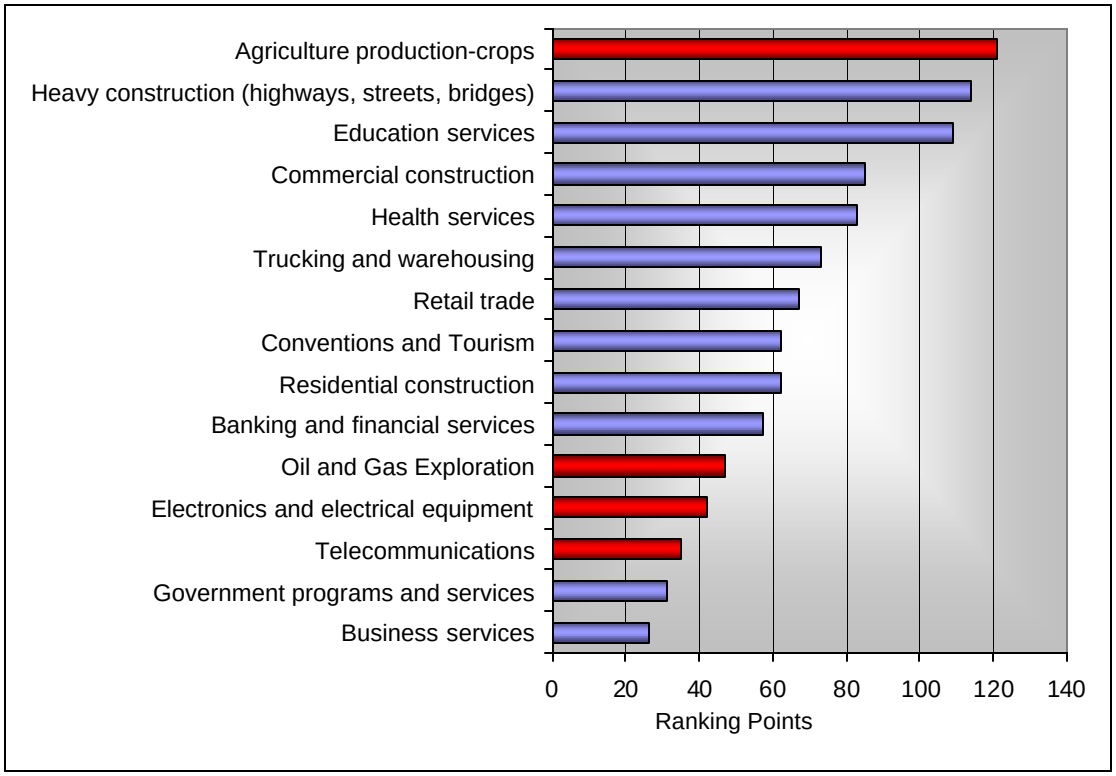
It is the opinion of the business leaders surveyed that Hidalgo County's economy in the next 5-to-10 years will continue to be dominated by the service industries and that "wealth creating" or "leading" industries will not play an important role.

For example, in technology areas such as Austin, TX the service industries --- professional, academic, local government --- grew in numbers and in value-added excellence as a result of the growth of "core" technology industries (such as IBM, Motorola, Advanced Micro Devices, Applied Materials) locating in Austin and new firms (such as Dell Computers, Desk Top Manufacturing, Evolutionary Technologies International, and National Instruments) being created. The rapid growth of these core industries produced wealth and high value jobs and this

led to the rapid growth of "following" industries such as restaurants, car dealerships, real estate firms, housing and building construction and to the growth in taxes for schools and parks. **A key reality facing Hidalgo County is that, according to our sample of business leaders, in the next 5-to-10 years there will be few important "wealth generating industries" located in the region.**

In order to focus on key industries to Hidalgo County's growth, the business leaders were asked to *Rank the top 5 industries that will contribute the most to job creation and economic development in the next 5-10 years***.** This is a slightly different question than the first one, because it forces the respondents to pick just a few industries and so has the potential of discovering industries viewed as particularly strong contributors to the county's economic development. Figure 64 summarizes the results by giving 5 points for a first place ranking, 4 for a second, and so on. Included are those industries receiving at least 25 points.

Figure 64: Rank Most Important Industries Contributing to Job Creation and Economic Development in the Next 5-10 Years



With the obvious glaring exception of agriculture, this ranking question shows relatively the same perceptions about the most important industries for the county's future economic development as the first question did. The highest ranking being given to agriculture production-crops is a result quite different from the responses to the first question (agriculture being only fifteenth there) and raises some questions about what conclusions should be drawn from this apparent anamoly. One explanation is that among the respondents there is a small, but significant number who see agriculture as extremely important (ranking it first), while among the

rest of the respondents the high rankings are distributed more widely across several of the industries.

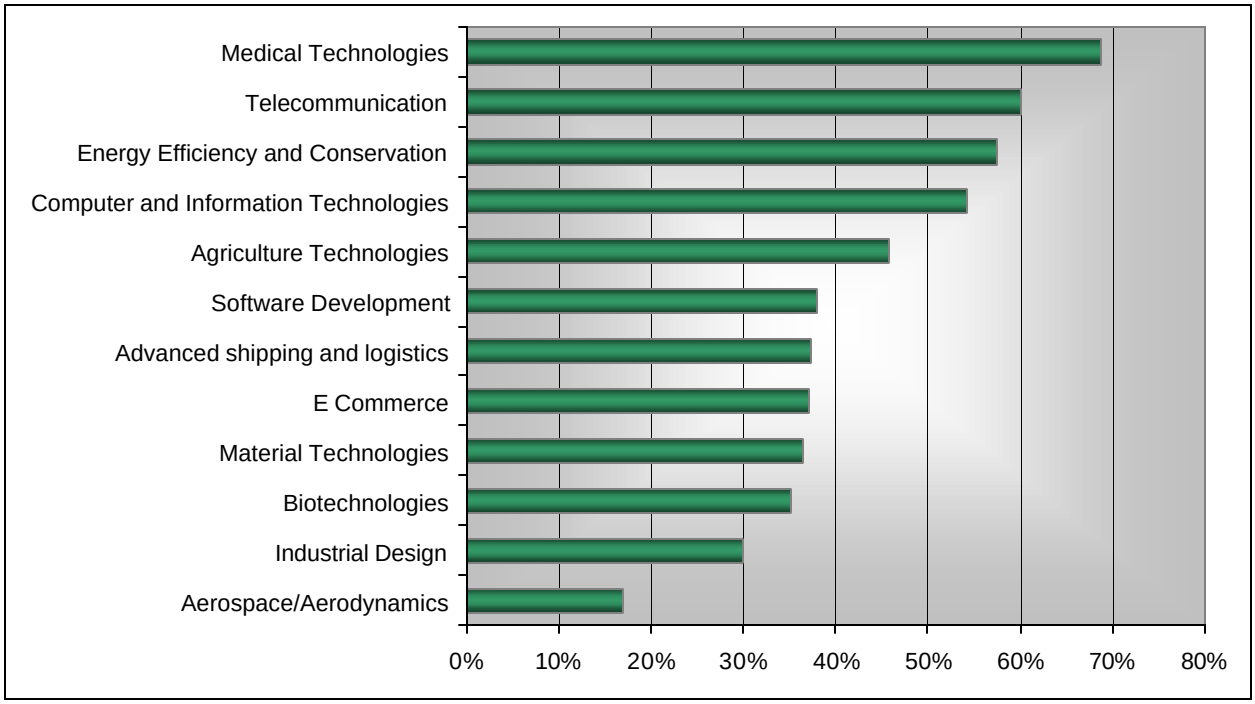
No matter the explanation, Figure 17 shows that **the industry ranked highest for job creation and economic development in Hidalgo County and the only "leading industry" in the top ten, is also noted for its declining employment and generally low wages and career development.**

The opinions expressed by the business leaders in these first two questions are not particularly surprising because it is human nature to expect the future to be like the past. The problem is that the past has seen Hidalgo County's economy without significant "wealth creating industries," and so, without a significant number of jobs with salaries at least at the state average. Some sort of change is necessary, but the prospect of such a change is not on the radar screen of the business leaders surveyed.

Hidalgo County's Emerging Economy

To focus on what might be a source of change, business leaders were asked about "emerging" industries, that is, new "leading" industries that emphasize the technology sector. The percentages listed in Figure 65 are of those respondents considering the factor "important" as opposed to "somewhat important," "not important," or "don't know."

Figure 65: Emerging Industries Considered Most Important for Job Creation and Economic Development in the Next 5-10 Years



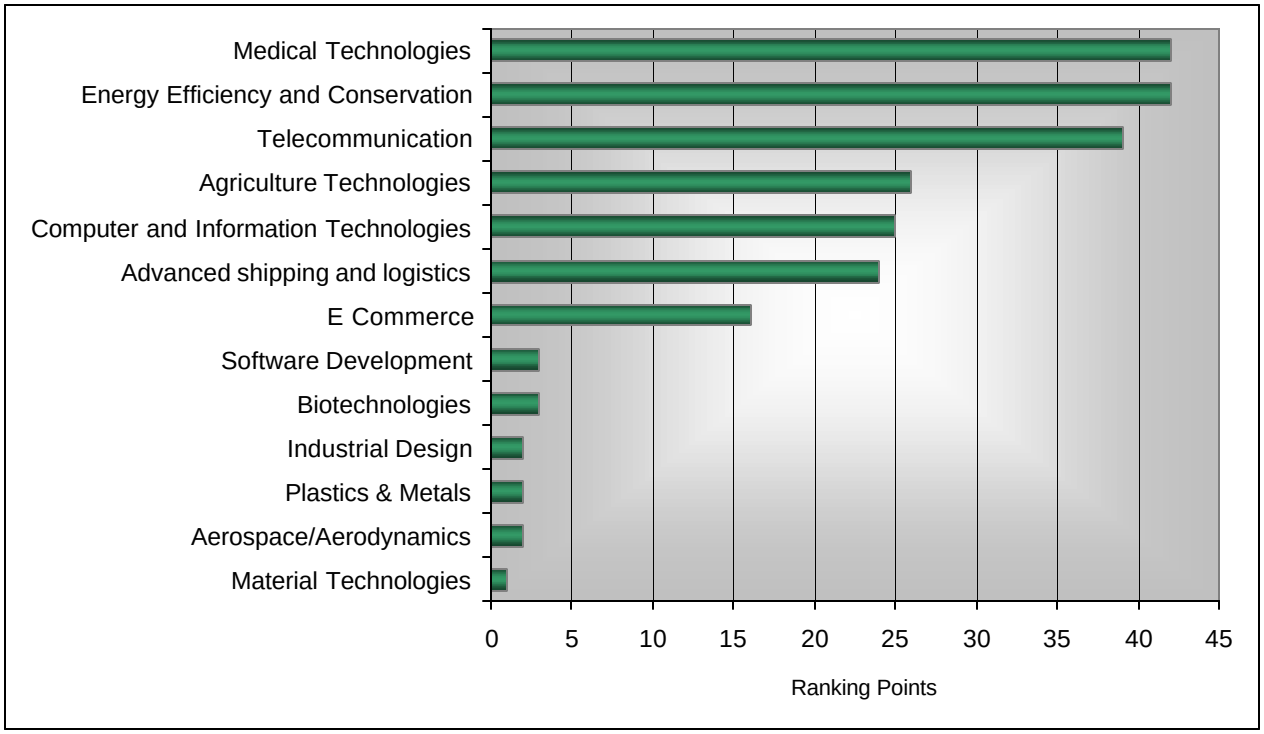
Five emerging industries were considered most important for job creation and economic development by over 40% of Hidalgo County's business leaders:

- Medical Technologies
- Telecommunications
- Energy
- Computer and Information Technologies
- Agriculture Technologies.

Four of these emerging industries (Medical, Telecommunications, Energy, and Agriculture) are or could be grounded in the established industries listed in Figures 16 and 17 and the 5th industry, Computer and Information Technologies, is considered and important underpinning technology for all four of these locally established industries to be nationally and globally competitive.

To focus on the most important sectors, business leaders were asked to Rank the top two emerging industries that will contribute the most to job creation and economic development in Hidalgo County in the next 5-10 years. For Figure 66, two points were given for a ranking of first, and one point for a ranking of second.

Figure 66: Most Important Emerging Industries Contributing to Job Creation and Economic Development in the Next 5-10 Years



Topping the list of most important emerging industries are Medical Technologies, Energy Efficiency and Conservation, and Telecommunications followed by Agriculture Technologies, Advanced Shipping and Logistics, and E Commerce. **These 7 industries might well form the**

core of a focused economic development strategy that is concerned with wealth creation and career opportunities as well as job creation and economic development for Hidalgo County.

Important Factors in Job Creation and Economic Development

Business leaders were asked to *provide their opinions about the degree of importance that certain key factors will play in terms of job creation and economic development in Hidalgo County in the next 5-10 years* (Table 28). [The percentages listed are of those respondents considering the factor "important" as opposed to "somewhat important," "not important," or "don't know."]

Table 29: Important Factors in Job Creation and Economic Development in the Next 5-10 Years

Factor	Percent
Quality of K through 12 education	85.0%
Affordable and available water supplies	84.1%
Quality of college and university education	82.2%
Quality of technical and vocational education	78.5%
Skill of entry level workforce	77.4%
Utilities	76.2%
Skill of managerial and professional workforce	75.5%
Affordable and available energy	73.8%
Cross border infrastructure to handle flow of people & goods	72.4%
Financing and capital access	69.8%
Affordable and available housing	67.6%
Public Services (police, fire, etc)	65.1%
Transportation services	65.1%
Cross border cooperation (general)	65.1%
Quality of life (cultural and recreational activities)	63.0%
Telecommunications	62.9%
Environmental Quality	59.8%
Tax incentives	54.2%
Industrial and university research and development	50.0%
Internet	46.7%

Out of 20 key factors the most important is K-12 education followed by affordable and available water supplies, and college/university education. Of the top seven factors, five center on education and training and two on utilities. Education including primary, college, and university and a trained workforce are considered by business leaders as THE most important factors for job creation and economic development in Hidalgo County. Affordable and available water and energy are also at the top of the list and also considered important by over half of the business leader respondents are:

- Cross border infrastructure
- Financing and capital access

- Affordable and available housing
- Public Services
- Transportation Services
- Cross-Border Cooperation
- Quality of Life
- Telecommunications
- Environmental Quality
- Tax Incentives

At the bottom of the list (still noted by about half of the business respondents) we see two factors that are considered key to emerging economy industries:

- Industrial and university R&D
- Internet Capability

This list of factors key to job creation and economic development in the next 5-to-10 years emphasizes the importance of Education and Skill Training at all levels for established and emerging industries. This fact becomes all the more crucial when we consider the predominately young population and undereducated and underemployed workforce that currently exists in Hidalgo County. **The ONE BEST HOPE for Hidalgo County to spur job and wealth creation AND career and economic development is to more fully nurture and develop its tremendous Human Capital Potential for established and emerging industry sectors.**

Given the clear and unambiguous ranking of key factors for job creation and economic development, Business Leaders were asked to *rate the ability of Hidalgo County to provide each factor* (Table 29). [The percentage of those rating the ability as either 1 or 2 on a five point scale from "very effective" to "not very effective" are tabulated.]

Table 30: Ability of Hidalgo County to Provide Key Economic Development Factors

Factor	Percent
Utilities	66.1%
Affordable and available energy	65.5%
Telecommunications	57.1%
Affordable and available housing	56.1%
Public Services (police, fire, etc)	53.3%
Quality of K through 12 education	51.4%
Quality of college and university education	50.7%
Internet	46.3%
Financing and capital access	45.5%
Quality of life (cultural and recreational activities)	43.9%
Affordable and available water supplies	42.4%
Quality of technical and vocational education	40.3%
Transportation services	40.0%
Environmental Quality	40.0%
Cross border cooperation (general)	38.7%
Skill of managerial and professional workforce	38.6%

Tax incentives	37.0%
Cross border infrastructure to handle flow of people & goods	32.8%
Skill of entry level workforce	28.3%
Industrial and university research and development	18.9%

About half the business leader respondents felt that the region was capable of providing quality K-12 and college and university education. Less than half the respondents felt that the region would be able to provide:

- Quality Internet services
- Financing and capital assets
- Quality of Life
- Affordable and available water
- Quality technical and vocational education
- Transportation Services
- Environmental Quality

At the bottom of the list are:

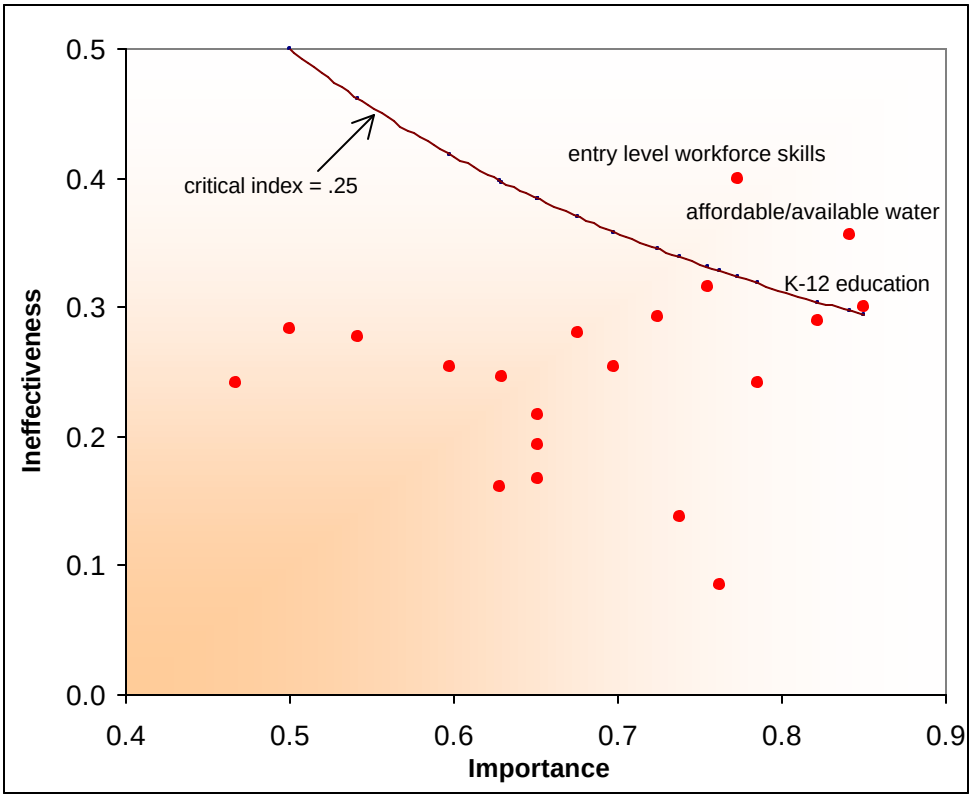
- Cross-Border Cooperation
- Skill of managerial and professional workforce
- Tax Incentives
- Cross-Border Infrastructure to handle the flow of people and goods
- Skill of entry-level workforce
- Industrial and university research and development

The last two items on the list of regional capability are **skill of entry-level workforce** and **industrial and university R&D**—two factors that this report has emphasized as being crucial to sustained regional technology-based growth. Globally-competitive technology or knowledge-based enterprises are increasingly based on leading-edge technology development and R&D. Therefore, the low effectiveness rating (18.9%) of this factor is definitely of concern. **Hidalgo County business leaders do not have confidence in the region's ability to provide adequate R&D resources.**

What factors are considered most important for economic development and at the same time assigned the lowest ratings in terms of the "region's ability to provide?" These factors should be targets in planning economic development strategies. Figure 67 plots **importance** against **ineffectiveness.** According to this calculation, the most "critical" factors for Hidalgo County's economic development as determined by business leader respondents are:

- Entry-level workforce
- Affordable and available water
- K-12 education
- Quality of college and university education
- Skill of managerial and professional workforce

Figure 67: Importance of Factors vs. Ability to Provide for Them



For each factor a "critical index" was calculated as the product of the *"very important"* percentage and the two *"ineffective"* percentages, Table 30.

Table 31: Critical Rating of Development Factors

Factor	Critical Index
Skill of entry level workforce	0.309
Affordable and available water supplies	0.299
Quality of K through 12 education	0.255
Quality of college and university education	0.238
Skill of managerial and professional workforce	0.238
Cross border infrastructure to effectively handle growing flow of people & goods	0.212
Quality of technical and vocational education	0.190
Affordable and available housing	0.190
Financing and capital access	0.178
Quality of life (cultural and recreational activities)	0.155
Environmental Quality	0.152
Tax incentives	0.151
Industrial and university research and development	0.142
Transportation services	0.141
Cross border cooperation (general)	0.126

Internet	0.112
Public Services (police, fire, etc)	0.108
Affordable and available energy	0.102
Telecommunications	0.101
Utilities	0.065

Of the top seven critical factors, five are related in some way to education or training. The other two are infrastructure issues with cross-border components. It is important to emphasize that these ineffectiveness ratings illustrate the lack of confidence in the region's ability to provide for *Skill of entry level workforce* (40%), *Affordable and available water supplies* (36%), or *Quality of K through 12 education* (30%).

Important Strategies for Job Creation and Economic Development

Effective strategies for economic development are crucial for technology-based growth leading to wealth and job creation. Business leaders were asked to *provide their opinion about the importance of 13 different strategies for job creation and economic development for Hidalgo County in the next 5-10 years*, Table 31.

Table 32: Important Strategies for Job Creation and Economic Development in Hidalgo County in the Next 5-10 Years

Strategy	Percent
Retention/expansion of existing industries/business	77.1%
Relocation of industries/businesses from outside region	72.6%
Promotion/support of local start-up industries/businesses	71.0%
Regional economic development collaborations of cities/counties on U.S. side of the border	67.9%
Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses	67.6%
Regional economic development plans focusing on job creation	66.0%
Economic diversification	61.9%
Cross-border economic development collaborations	59.4%
Free trade zones	59.0%
Access to venture capital	57.7%
Promotion/support of new business incubators	51.4%
Further development of maquiladoras	50.0%
Leveraging of community assets	47.6%

According to the respondents the most important economic development strategies for Hidalgo County are:

- Retention and expansion of existing industries/businesses
- Relocation of industries/businesses from outside the region
- Promotion of local start-up industries/businesses

- Regional economic development collaboration of cities/counties on the U.S. side of the Border
- Promotion/support of local entrepreneurs in high-tech/high value-added industries/businesses
- Regional economic development plans that focus on job creation and economic diversification
- Cross-border economic development collaborations

Next the respondents were asked about the region's ability *to provide each strategy*. Table 32 shows the percentage of those rating this ability as either 1 or 2 on a five point scale from "very effective" to "not very effective."

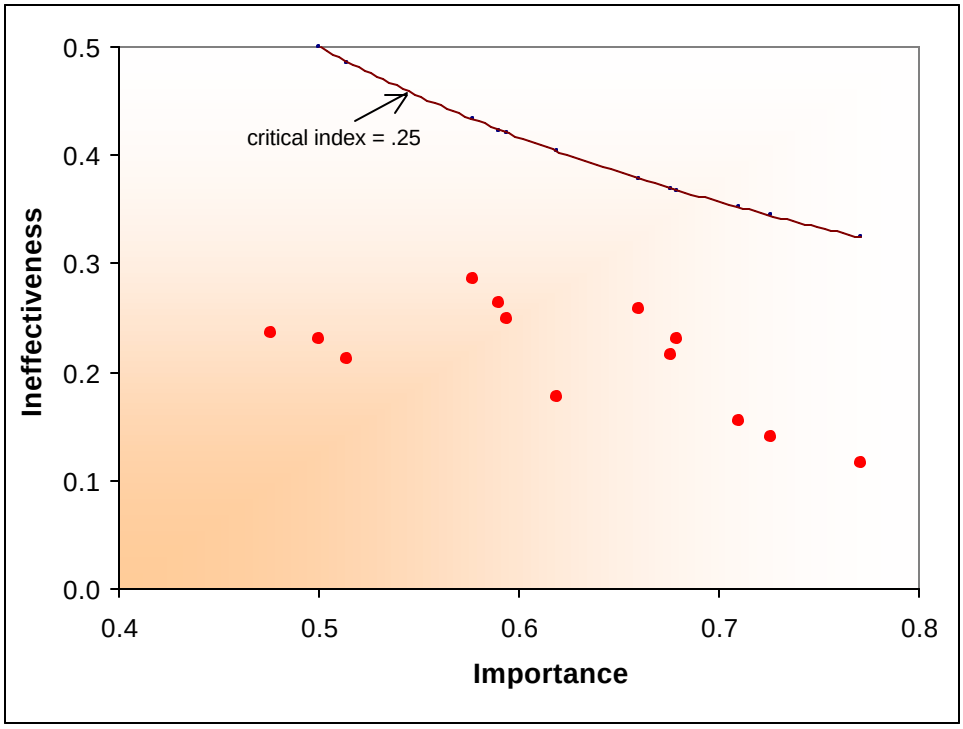
Table 33: Ability of the Region to Provide for Development Strategies

Retention/expansion of existing industries/business	61.7%
Free trade zones	56.6%
Further development of maquiladoras	55.8%
Relocation of industries/businesses from outside region	51.6%
Economic diversification	49.0%
Regional economic development collaborations of cities/counties on U.S. side of the border	48.1%
Promotion/support of local start-up industries/businesses	46.6%
Cross-border economic development collaborations	44.6%
Leveraging of community assets	42.1%
Regional economic development plans focusing on job creation	41.4%
Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses	39.2%
Promotion/support of new business incubators	38.3%
Access to venture capital	36.7%

Over half of the respondents indicate that the region is most capable of providing the more "traditional" economic development strategies of retention and expansion of existing firms and industrial recruitment. **Fewer than half the respondents report that the region is effective in regional economic development collaborations among Border cities and counties, in leveraging regional assets, and in cross-border collaborations. At the bottom of the effectiveness ranking are strategies for promotion of local entrepreneurs and new business development.** The relative lack of confidence in the ability to provide *Promotion/support of local start-up industries/businesses* (47%)and to provide *Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses* (39%) raises concerns about the ability to grow new technology businesses.

Strategies considered important and yet viewed as not being effectively implemented in the region are considered most "critical" (Figure 68).

Figure 68: Importance of Strategies vs. Ability to Provide for Them



For each strategy a "critical index" can be calculated as the product of the "very important" percentage and the two "ineffective" percentages, Table 33.

Table 34: Critical Rating of Development Strategies

	Critical Index
Regional economic development plans focusing on job creation	0.171
Access to venture capital	0.165
Regional economic development collaborations of cities/counties on U.S. side of the border	0.157
Free trade zones	0.156
Cross-border economic development collaborations	0.149
Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses	0.146
Further development of maquiladoras	0.115
Leveraging of community assets	0.113
Promotion/support of local start-up industries/businesses	0.110
Promotion/support of new business incubators	0.109
Economic diversification	0.109
Relocation of industries/businesses from outside region	0.102
Retention/expansion of existing industries/business	0.090

Since none of the strategies have a critical index approaching .25, the general conclusion from Figure 6 is that those strategies considered most important are also considered to be effective in the region. However, at the top of the Critical Index list (Table 7) are:

- Regional economic development plans
- Regional economic development collaborations on the U.S. side of the border
- Free trade zones
- Cross-border economic development collaborations
- Promotion and support of local entrepreneurs

Business Leader's Opinions

Hidalgo County business leaders were asked three open-ended questions concerning key assets, challenges, and ideas for regional economic development.

When asked the most important factor or condition that will facilitate the economic development of Hidalgo County over the next 5-10 years, *business leaders emphasized improving education, infrastructure, and diversification of industry. Promoting local business and having less political division was also emphasized.*

	Number Responding
Improve Education	20
Infrastructure	19
Diversification of Industry	17
Promote Local Business	11
Less Political Division	8
Free Trade Zone	4
Access to Capital	3
Tax Breaks	3

*When asked "*What do you think will be the most important factor or condition that will restrict economic development in Hidalgo County in the next 5-10 years *the business leaders emphasized inadequate utilities, lack of training and educated workforce, local quality of life not being attractive to major corporations.*

	Number Responding
Utilities	16
Lack of training and education	14
Quality of life will keep out major corporation	12
City/County Government	9
Lack of strategic plan	9
Lack of Capital	8
NAFTA	6
High Taxes	5
Brain Drain	4

Maquila cut backs	4
Mexico's Inflation	3

When asked, *"What one "key idea" or project should Hidalgo County undertake to significantly improve the area's economy"* the business leader respondents emphasized developing tourism; quality education; regional cooperation in terms of City and County government, the local chamber, and financial institutions; and having a capable City Manager and County Administrator.

	Number Responding
Develop Tourism	19
Quality Education	18
Cooperation City/County Chamber/Financial	18
City Manager/County administrator	15
Transportation	5
Recycle	4
Access to capital	4
Go after new Businesses	4

Open Ended Comments

Respondent 20 years in Valley in Agriculture industry

Facilitating Factor:
The most important factor for our economy is to diversify the availability of jobs. We need to get new industry into our region rather than sticking with the same old agriculture and trucking – in the coming decade our job unemployment will be extremely high unless we bring new industry that emphasizes technology and border collaboration.

Restricting Factor:
The fact that many people still live in the past and want more of the same rather than diversifying the market

Key Idea:
We need a lot more industry and technology markets- the industry part should be a collaboration between the U.S. and Mexico, but as far as technology is concerned we need technology firms from up North to come down, or some young guns from the Valley to take the reins.

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7 years in region – hotel business

Facilitating Factor:
Continue to enhance the community colleges to further provide communication skills and corporate awareness. Technical and vocational skills are also required in order to relocate industries and businesses from outside the region.

Restricting Factor:
Lack of "global thinking" from elected, local officials.

Key Idea:
Construction of a 1st class convention center.

Other Comments:
Metro area leaders need to be more cooperative to share ideas and most important to pool funds to deliver quality of life facilities rather than to try and outdo each other.

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28 years in region – business owner

Facilitating Factor:
Having the Chambers of Commerce working together and Economic Development corps working together—it is the only way to truly win.

Restricting Factor:
lack of people in city government that understand what needs to be done—what area businesses are all about

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27 years in area – business owner

Key Idea:
Approach the planning for resolution of social and economic problems from a REGIONAL perspective.

---

40 years in area – business owner

Facilitating Factor
If we do not raise the educational levels of the people of South Texas, the Valley will be forced to import the high tech and higher paid personnel.

---

35 years in region – museum director

Facilitating Factor:
The educational achievement of our workforce which is entirely dependent upon what we expect and demand of ourselves….we need to quit making excuses and utilize peer pressure in our communities to communicate to our children and teachers that first rate educational achievement is possible and achievable.

Restricting Factor:
Provincialism – we need to be willing to work together for the good of the whole region.

Other Comments:

We need to look at ourselves as others see us and communicate that each and every member of our community is involved in the "courtship" that recruits visitors and companies to the area that create the jobs that will improve our lives.

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10 years in area – construction industry

Facilitating Factor:
A highly educated workforce with skills required by the companies relocating to the region—access to capital to start and to grow businesses—stable year around employment with "living wages,"—total support of the business community by all—valley businesses should support other local and regional businesses.

Restricting Factor:
Lack of sufficient water to support industry and public utilities—OUR region has NO long range plans to increase or conserve the most valuable resource.

Conclusions from the Survey of Hidalgo County Business Leaders

According to our sample of business leaders, in the next 5-to-10 years there will be few important "wealth generating industries" located in the region.

"Agriculture production-crops," ranked as the top industry for job creation and economic development in Hidalgo County and the only "leading industry" in terms of wealth generation, is also noted for its declining employment and generally low wages and career development.

Agriculture and Oil and Gas, two giants from Hidalgo County's traditional economy, are listed as being the most important "leading" industries in the coming 5-to-10 years.

In spite of this relatively discouraging set of opinions, four indetified "emerging" industries (Medical, Telecommunications, Energy, and Agriculture) are or could be grounded in the more established traditional and service oriented industries in Hidalgo County and a 5th emerging industry, Computer and Information Technologies, is considered and important underpinning technology for all four of these locally established industries to be nationally and globally competitive.

Therefore, the following seven industries might well form the core of a focused economic development strategy for Hidalgo County that is centered on wealth creation and career opportunities as well as job creation and economic development:

- Medical Technologies
- Energy Efficiency and Conservation
- Telecommunications
- Agriculture Technologies
- Computer and Information Technologies
- Advanced Shipping and Logistics
- E-Commerce

Among the key Economic Development factors, the most important is K-12 education followed by affordable and available water supplies, and college/university education. Of the top seven factors, five center on education and training and two on utilities. Clearly education (including primary, college, and university) and a trained workforce are considered by business leaders as THE most important factors for job creation and economic development in Hidalgo County. Three of the identified factors have a high importance rating combined with low rating of the region's ability to provide for them. These three critical factors are: (1) Skill of the Entry Level Workforce, (2) Affordable and Available Water Supply, and (3) Quality of K through 12 education. It is very important that strategies be developed to deal with these identified critical factors. At the very bottom of the rating of the region's ability to provide for factors is Industrial and University Research and Development—another area of concern if growth in technology is to take place.

Fewer than half the Hidalgo County Business Leader respondents report that the region is effective in regional economic development collaborations among Border cities and counties, in

leveraging regional assets, and in cross-border collaborations. At the bottom of the effectiveness ranking are strategies for promotion of local entrepreneurs and new business development. Since growth in technology has, in other locales, depended heavily on new businesses developed locally, these perceived lacks of effectiveness present other hurdles to be overcome in organizing the community for economic change.

Conclusions

The one dominant conclusion of this assessment of Hidalgo County's assets and challenges for accelerated technology-based growth is the key importance of focused education and training to meet the needs of (1) the growing and young Hispanic population, and (2) established and emerging technology-based industries. Hidalgo County business, academic, and government leaders have a limited window of opportunity to realize and act on the potential economic development benefits of the Border Region and its Human Capital --- a talented, capable, young, and bi-lingual workforce that is today largely undereducated and under employed.

A key determinant of Hidalgo County and South Texas' future is whether the growing and young Hispanic population is viewed and treated as an asset or as a challenge. In short, the Lower Rio Grande Valley and the State's economic future and quality of life will largely be determined by one key factor: How well the Hispanic and minority populations are fully integrated as active participants and leaders in the region's business, education, and government sectors.

There is now a window of opportunity for Hidalgo County to transition to wealth generating and career enhancing employment. However, are significant gaps in the region's civic and smart infrastructures that inhibit this transition including:

- Being able to successfully grow, retain and recruit talent in sufficient numbers
- Enrolling and retaining increased numbers of the regions young population in world-class technology-intensive education and training
- Increased university and corporate-based R&D targeted for industry sectors that are strategic to the regions economic development
- Enhanced entrepreneurial education and training programs
- Enhanced financial support for technology venturing and fast growth companies
- Entrepreneurial support networks and structures and know-how for emerging technology-based enterprises
- Enhanced leveraging of regional and cross-border assets to overcome short- and longer-term challenges

Success in meeting the above challenges will determine Hidalgo County's success in:

- The growth and retention of a talented workforce
- The recruitment of technology-based firms
- The growth and retention of established technology-based firms
- New firm growth, retention, and recruitment
- Civic and Social Entrepreneurship to better leverage the regions assets for "take-off" and to better leverage national and global assets for sustained growth

Compared to government, retail sales, services, manufacturing and agriculture, Hidalgo County's Technology Sector is small in size numbering between 363 and 72 (depending on how one defines technology firms) with 75% with less than 10 employees and 50% with annual sales less than $1 Million. The areas oldest technology firms (Barrea's Supply Company and Computer Command) date back to 1918 and 1965 and the growth of the number of technology firms has

been, on average, one or two every 5 years until 1995 when yearly foundings/locations increased to 3 or 4 a year to 8 foundings in 1998.

Traditional and current economic development strategies that focus on industry recruitment, the growth of low wage jobs, and low cost of living will NOT sustain Hidalgo County and the surrounding region into the 21st Century. A basic increase in manufacturing jobs without a change in the nature of those jobs or wage levels will NOT significantly impact, in a positive manner, the overall wealth creation of the county. Competing on low wage jobs and a low cost of living is NOT the solution – high wage jobs and career development is the only way to grow, retain, and recruit the needed workforce

Call Centers are the largest "technology" employers (approximately 3000 jobs) in Hidalgo County. These firms do provide important IT training for employees seeking careers in more technology intensive firms. Among the County's challenges is to provide increased numbers of high wage, career oriented jobs for those young people "graduating" from call centers as well as from the areas colleges and the University of Texas – Pan American. Otherwise the options for this "talent" is to be either stuck in a "dead-end" job in Hidalgo County or to seek employment in other technology centers in Texas or nationwide. And such jobs are also needed if Hidalgo County intends to "one day" recruit this talent back home.

In addition to the general overall national/global economic downturn, the major challenge inhibiting the growth of locally-based technology firms is being able to hire and retain qualified employees. And according the county's technology entrepreneurs there is a perceived general lack of community support structures, such as entrepreneurial networks or councils and special development programs, and overall lack of county appreciation for these technology firms. As noted their size is relatively small (generally fewer than 10 employees) but these firms are key to the future economic development of the region in that they are competing and doing business, and training employees in emerging technology sectors that need to be developed in Hidalgo County. It is this emerging technology sector that has the potential to generate increased numbers of high income, value added jobs and exciting careers for qualified employees being educated and living in the region. It is these kinds of jobs in Houston, Austin, Dallas and other states that attract and recruit the region's young and talented workforce.

There are examples of technology-based start-up firms in Hidalgo County that are competing nationally and globally and growing locally. It is the conclusion of this report that greater emphasis should be placed on Retaining and Growing such technology-based firms, while focusing recruitment on firms that facilitate the development of emerging technology clusters such as Health Care and Medical, Telecommunications, and CIT. In keeping with our suggested economic development strategy, regional, national, and global partnerships would be targeted for their support of targeted recruitment, firm growth and retention, and accelerating the growth of local start-up firms.

Hidalgo County and the surrounding counties have limited assets/resources --- financial, talent, public/private commitment --- we advocate a better focusing of these limited resources on the growth of the technology sector and the development of "leading industries." With the

development of a technology sector and increasing wage levels and career options other things happen (e.g., follow) such as:

- The successful retention and recruitment of talent
- The expansion of service industries including law, accounting, advertising, public relations, etc.
- Increased income for restaurants, book stores, furniture stores, entertainment sectors, tourism, etc.)
- Large capital projects (e.g. a convention center, commercial and residential construction) become sustainable

It is partly a question of what comes first—technology firm growth through recruitment and technology venturing or increasing the numbers of locally trained employees. This report suggests that both strategies must work in consort through the leveraging and networking of local talent, technology, capital and know-within a supportive community.

As this report has noted, the county's major job growth has been in low wage jobs while the manufacturing sector, which pays comparatively well, is decreasing in employment. Clearly education and training are key to growing technology-based firms in target technology sectors such as medical/health care, CIT, and software. In addition, Hidalgo County needs to increase and focus entrepreneurial and technology venturing support structures to better leverage regional assets and to mitigate significant gaps in talent, technology, capital, and know-how. Research and development is almost non-existent in the County. The RAHC will encourage the leveraging of regional talent, technology, capital, and know-how though the development of bi-national education and training programs focused on the unique health problems of U.S./Mexico border region. Indeed, the RAHC will be an important catalyst for accelerating the growth of the emerging Health Care/Medical Industry/BioTech Cluster for the Lower Rio Grande Valley.

The One Best Hope for Hidalgo County to spur job growth and wealth creation along with career and economic development is to more fully nurture and develop its young and large Human Capital Potential for established and emerging technology-based industry sectors. In this regard it is also considered important to more fully develop and leverage regional economic development assets and cross-border collaborations to accelerate the growth of new business development and entrepreneurs.

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Appendices

Appendix A—Participants in Interviews and Focus Groups

Tony Aguirre	*McAllen Bolt and Screw*
Steve Ahlenius	*McAllen Chamber of Commerce*
Mike Allen	*McAllen Economic Development Corporation*
Kathy Jo Arizmendi	*IEC Electronics Corp.*
Rey Banda	*City of McAllen*
Diana Berger	*Region One Education Service Center*
Doug Bready	*Texas State Bank*
Patrick Brewer	*Hunt Property*
Gerry Brower	*Automation Tooling Systems*
Alonzo Cantu	*Cantu Construction Co.*
Ruben Cardenas	*Cardenas, Whitis and Stephen LLP*
Dr. Jacob Chen	*University of Texas - Pan American*
Oscar Cuellar	*Pharr Economic Development Corporation*
Gregory Cooksey	*South Texas Internet*
Dr. Dan Dearth	*University of Texas - Pan American*
Dr. John Emery	*University of Texas - Pan American*
Rev. Jerry Frank	*Valley Interfaith*
Keith Frase	*The Wornick Company*
Scott Fuller	*RGV Wireless*
Ruben Galvan	*Compuware*
Adrian Garcia	*Region One Education Service Center*
Wanda Garza	*South Texas Community College*
Marco Garza	*South Texas Community College*
Ramiro Garza	*Edinburg Economic Development Corporation*
Raudel Garza	*Mission Economic Development Authority*
Frank Gomez	*Convergys Corp.*
Hernan Gonzales	*Weslaco Development Committee*
David Guerra	*International Bank of Commerce*
Bill Hamer	*Hamer Enterprises*
Dr. Sylvia Hatton	*Region One Education Service Center*
Carlos Herrera	*Workforce Solutions*
Liborio Hinojosa	*H&H Foods*
Jaime Huerta	*Xerox*
Robby Hymer	*Inter National Bank*
Mitch Killion	*VOS Texas*
Dr. William McIntyre	*University of Texas - Pan American*
Mark Magee	*First National Bank*
Carlos Margo	*South Texas Community College*
Dr. Hilda Medrano	*University of Texas - Pan American*
Leo Montalvo	*City of McAllen*
John Nelson	*South Texas Community College*

Dr. Miguel Nevárez	*President, University of Texas - Pan American*
Gerardo Nuñez	*Nu-Co Tools*
Joe Ochoa	*City of Edinburg*
Keith Patridge	*McAllen Economic Development Corporation*
Sonia Perez	*Southwestern Bell*
Dr. Olga Ramirez	*University of Texas - Pan American*
Janie Ramos	*McAllen Economic Development Corporation*
Dr. Shirley Reed	*President, South Texas Community College*
Mario Reyna	*South Texas Community College*
A. Jabier Rodriguez	*Lone Star Bank*
Glen Roney	*Texas State Bank*
Eddie Saenz	*J.E. Saenz & Associates Inc.*
David Salinas	*International Bank of Commerce*
Jon Schill	*Digital Broadcasting*
Harold Sigler	*McAllen Medical Center*
Chris Smolik	*Edinburg Hospital*
Noe Trevino	*Regency Plastics*
Paul Tucker	*Rio Grande Regional Hospital*
Dr. John Villarreal	*University of Texas - Pan American*
David Watkins	*Multimedia Production Center*
Mike Willis	*Allison Manufacturing*
Emilio Yanez	*KGBT-TV*